VOLUME III.

TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1941

No. 265

FEDERAL POWER COMMISSION AND ILLINOIS COMMERCE COMMISSION, PETITIONERS

vs.

NATURAL GAS PIPELINE COMPANY OF AMERICA AND TEXOMA NATURAL GAS COMPANY

No. 268

NATURAL GAS PIPELINE COMPANY OF AMERICA AND TEXOMA NATURAL GAS COMPANY, PETITIONERS

vs.

FEDERAL POWER COMMISSION AND ILLINOIS COMMERCE COMMISSION

ON WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT

Petitions for certiorari filed July 12, 1941, July 14, 1941

Certiorari granted October 13, 1941

IN THE

United States Circuit Court of Appeals
For the Seventh Circuit

No. 7454

NATURAL GAS PIPELINE COMPANY OF AMERICA AND TEXOMA NATURAL GAS COMPANY,

Petitioners,

vs.

FEDERAL POWER COMMISSION AND ILLINOIS COMMERCE COMMISSION,

Respondents.

Petition for Review of Interim Order of the Federal Power Commission.

INDEX.

Petition of the Illinois Commerce Commission, filed with the Federal Power Commission, September 23, 1938 1

Order of Federal Power Commission instituting Investigation, entered October 14, 1938..... 6

Answer of Natural Gas Pipeline Company of America and Texoma Natural Gas Company to Petition, filed November 16, 1938..... 9

Order fixing date of hearing, entered April 14, 1939... 13

PROCEEDINGS AT HEARING.

Statement by Examiner..... 15

Statement by Mr. Morgan..... 16

Colloquy 25, 33, 64

Statement by Mr. Booth..... 28

Statement by Mr. May..... 31

ABSTRACT OF TESTIMONY.

Witnesses for Federal Power Commission.

Testimony of:

Brown, Claude C.....35, 36

Knapp, Charles W., Jr.....2004, 2103, 2588

Smith, Charles W.....2041, 2222, 2632

Witnesses for Illinois Commerce Commission.

Testimony of:

Kleinman, Fred 2075, 2382

Ostrander, E. D.....1977, 2277

Woodford, John M.....57, 393

Vol. I, pp. 1 to 846; Vol. II, pp. 847 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3032; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4023.

Witnesses for Defendants.

Testimony of:

Biddison, P. McDonald.....1041, 1284
Brainard, W. F..... 481
Brown, Floyd C.....491, 1311, 1636
Bulla, W. T..... 987
Bussard, R. M.....715, 854, 1056
Campbell, S. E.....1003, 1398, 2554, 2637
Cooke, John A.....1446, 1909, 2616, 2669
Cottingham, V. E..... 187
Davidson G. M.....1013, 1040, 1068, 1142
Davidson, W. H..... 815
Delafield, Robert H.....1415, 1753, 2558, 2657
Dickinson, J. G.....613, 874, 1379
Dorau, H. B.....1512, 1636, 1788, 1965, 2527
Eastman, H. L.....1210
Emery, J. A.....1324, 1451, 1638, 1690, 1927
Foster, M. E.....1110
Galloup, Charles I..... 453
Gill, Stanley 361, 1024
Gillman, William C.....
.....1471, 1678, 1702, 1867, 2469, 2600, 2671
Hamilton, F. C.....1191, 1271
Hammerschmidt, E. G..... 465
Hughes, C. Don..... 315
Kesinger, E. V.....647, 2596
Miller, S. L.....1340, 1383
Palyi, Melchoir 398
Parker, R. D..... 249
Peterson, C. J.....192, 359
Powers, R. T..... 767

Testimony of:

Smith, W. D. 1119
Solow, E. M. 1167, 1859
Stoddart, Frank W. 1259
Strong, R. G. 903
Taubman, Herman P. 1148, 1190
Thompson, J. D., Jr. 275
Wallace, R. J. 1341
Willard, J. L. 1240
Zwiener, K. V. 1367

EXHIBITS.

No.

3 Production and B.T.U. by Fields Texoma Company for year ending June 30, 1938 (F. P. C.) ..2673
4 Gas sold or delivered, Texoma Company for year ending June 30, 1938 (F. P. C.) 2674
5 Texoma Company Consolidated Operating Analysis, etc. (F. P. C.) 2675
6 Texoma Company earnings analysis, 1934 to 1938, inc. (F. P. C.) 2676
7 Natural Gas Company gas sold or delivered by companies for year ending June 30, 1938 (F. P. C.) 2677
8 Natural Gas Company report of purchased gas and cost, 1934 to 1938, inc. (F. P. C.) 2679
9 Natural Gas Company consolidated operating analysis of gas purchases and sales, 1934 to 1938, inc. (F. P. C.) 2681
10 Natural Gas Company Sales and Revenue, 1934 to 1938, inc. (F. P. C.) 2683
11 Natural Gas Company Sales Agreements on file with Federal Power Commission (F. P. C.) ..... 2685.

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4023.

No.	Exhibits.	
14	Map showing delivery points and Natural Gas Transmission Lines (F. P. C.)	2687
15	Natural Gas Company and Texoma Company Earnings Statements, Calendar Years to December 31, 1938 (I. C. C.)	2689
28	Natural Gas Reserves — Texas Panhandle (Defts.)	2756
36	Natural Gas Reserves — Texas Panhandle (Defts.)	2757
41	Natural Gas Reserves — Texas Panhandle (Defts.)	2759
43	Explanation of Reserve Calculations (Defts.)	2760
44	Details of Reserve Estimate Marginal Gas Acreage—Texas Panhandle Field (Defts.)	2767
53	Errata—Exhibit No. 15 (I. C. C.)	2771
54	Natural Gas Company and Texoma Company Balance Sheets, December 31, 1934 to 1938, inc. (I. C. C.)	2771
78	Picture showing assembly of two 18-inch gas lines upon a suspension bridge across Big Blue River in Moore County, Texas (Defts.)	2783
79	Two photographs: Canadian River crossing in Hutchinson County, Texas, and typical manifold for submerged river crossing (Defts.)	2785
84	Map showing distances of Panhandle, Michigan and Illinois Fields from Chicago (Defts.)	2787
85	Photographs of Scenes at Pipeline Break near Sheffield, Illinois (Defts.)	2789
86	Statement of Open Flows and Rock Pressures on Date Wells were abandoned. Eldorado & Augusta Fields—Butler County, Kansas (Defts.)	2801

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4023.

No.	Exhibits,	
92	Picture of Compressor Station No. 1 (Defts.)	2803
114	Regulatory Expense (Defts.)	2805
116	General Expense, Taxes, New Business Expense (Defts.)	2806
117	Summary of Additional Capital Expenditures and Operation and Maintenance (Defts)	2819
122	Salvage Value as of December 31, 1954 (Defts.)	2841
	Non-Salvageable Property not listed in Exhibit 122	1143
123	Picture Showing Interior of Fritch Station and 12 Engines (Defts.)	2907
124	Errata Sheets for Exhibit 122 (Defts.)	2911
125	Volumes I and II of Valuation (Portions of) (Defts.)	2922
129	Personnel Data—Key men in Chicago Office, etc. (Defts.)	2927
130	Cost of Attaching Business (Defts.)	2943
131	Market Value of Leases (Summary Sheet) (Defts.)	2947
132	Quotations and Yields of U. S. Treasury Notes and Bonds at Close of Market on August 15, 1939 (Defts.)	2951
133	Average Yield obtainable from Investments in U. S. Notes and Bonds (Defts.)	2953
134	Explanation of Method Used in Determining Reserves as of 8/1/31, on Acreage owned by Texoma 1/1/39 (Defts.)	2955
136	Earnings Statements for Calendar Years 1932 to 1938, inclusive (Defts.)	2958
137	Balance Sheets and Statements of Plant and Equipment December 31, 1931 to December 31, 1938, inclusive (Defts.)	2989

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4027.

No.	Exhibits.	
138	Statement of Operating Revenue and Expenses, etc. (Defts.)	3003
140	Earnings Statement covering entire life of Project (Defts.)	3021
141	Earnings Statement based on Book Cost as of January 1, 1939 (Defts.)	3025
142	Earnings Statement based on Reproduction Cost new less existing depreciation as of June 1, 1939 (Defts.)	3029
145	Reconciliation of Statement Included in Exhibits 136 and 15 (Defts.)	3033
146	Texoma Natural Gas Company Summary of Market Value of Leases (Defts.)	3069
147	Natural Gas Co. and Texoma Co. Data concerning Rate of Return, etc. (Defts.)	3071
148	Natural Gas Co. and Texoma Co. Data concerning Rate of Return—Year 1938 (Defts.)	3079
149	Estimated Earnings on Account of Increased Capacity and Delivery of Natural Gas when operating at Higher Pipe Stresses (Defts.)	3105
150	Natural Gas Co. and Texoma Co. Data concerning Rate of Return (Defts.)	3106
151	Photostat of Investment Treatises (Defts.)	3123
152	Natural Gas Co. and Texoma Company Data concerning Rate of Return (Defts.)	3141
154	Article by Paul Ryan, "The Natural Gas Industry an Expanding Service" (F. P. C.)	3305
155	Facing Sheet and Pages 4 and 5 from 1st amendment to Registration Statement of Public Service Co. of Colorado, filed with S. E. C. 12/10/38 (F. P. C.)	1880, 3314

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4023.

No.	Exhibits.
156	Certified copy of Gallagher's Exhibits 2 and 2A covering estimate of Investment and Anticipated Average Annual Net Earnings relative Docket 21170 before Illinois Commerce Commission (I. C. C.) 3320
	Exhibit 2—Estimate of Investment in Facilities for Production of Natural Gas in Texas, etc. 3321
	Exhibit 2A—Revised page 1 of Exhibit 2 ... 3333
157	Certified copy of Gallagher's testimony before Illinois Commerce Commission in connection with Exhibit 2 of Commerce Commission and covering Pages 12 to 99, inc. of record in case No. 21170 (I. C. C.) 3335
158	Facing Sheet and Page 62 from 1st amendment to Registration Statement of Public Service Co. of Colorado filed with S. E. C. 12/10/38 (F. P. C.) 3374
159	Facing Sheet and Pages 5 and 6 from Registration Statement of Public Service Company of Colorado filed with S. E. C. 8/30/39 (F. P. C.) ... 3379
160	Facing Sheet and Page 57 of Registration Statement of Public Service Company of Colorado filed with S. E. C. 8/30/39 (F. P. C.) 3385
161	Release No. 1667 of S. E. C. under Holding Company Act containing findings and opinion re Northern Natural Gas Co. (F. P. C.) 1884; 3390
162	Letter of Ralph E. Davis, Inc. to Northern Natural Gas Co. dated 6/1/39 re Natural Gas Reserves (F. P. C.) 1885, 3401

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3032 to 3417; Vol. VII, pp. 3418 to 3902; Vol. VIII, pp. 3903 to 4023.

No.	Exhibits.	
163	Pages 8, 9, 10 from Registration Statement filed with S. E. C. by Panhandle Eastern Pipeline Co. covering Ralph E. Davis Production Property and Gas Reserves (I. C. C.)	3408
167	Exhibit 49 in case of Chgo. District Pipeline Co. v. Lindheimer, et al., comparing present market price of issuance of Natural Gas Bonds (F. P. C.)	3413
168	Poor's Public Utility Volume 1939—Pages 164-167, inclusive (F. P. C.)	3419
169	Pages a55 to a61, inclusive of Moody's Manual of Investments 1939 (F. P. C.)	3428
170	Page 250 from American Gas Association Monthly, August, 1939, "Expanding Markets for Gas Industry Make Investments Sound," by P. S. Young (F. P. C.)	3458
171	Pages 19-20-37 from "Gas"—July, 1939, article by Percy S. Young entitled "The Investment Attributes of Gas Utility Securities" (F. P. C.)	3460
172	Pages 251-255 of American Gas Association Monthly issue of July-August, 1939, article, "A Banker Analyzes Natural Gas Industry Investment Values," by Frank R. Denton (F. P. C.)	3468
173	Pages 37, 38, 43 of "Gas," May, 1939, issue, article, "A Stock Broker Analyzes the Natural Gas Industry," by John Nickerson III (F. P. C.)	3471
174	Pages 56-61, incl. from 1939 Autumn issue of "The Index" article, "The Gas Industry" (F. P. C.)	3477

No.	Exhibits.
176	Pages 253-255, incl. from issue of July-August, 1939, of American Gas Association Monthly article, "The Fifth Big Job," by Charles R. Bellamy (F. P. C.) 3486
178	Pages 24-33 from January, 1939, issue of "Gas" article, "The Natural Gas Industry Provides Opportunities for Investment," by James S. Carroll (F. P. C.) 3492
179	Statistical Bulletin No. 37 of American Gas Association dated October, 1939, entitled "Annual Statistics of the Natural Gas Industry in 1938" (F. P. C.) 3496
180	Trends of Interest Rates and Bond Yields (I. C. C.) 3523
181	Summaries of Recent Financing by Natural Gas Systems (I. C. C.) 3535
182	Computations in Regard to the Sinking Fund Method of Amortization and Rate of Return on Net Investment (I. C. C.) 3553
183	Money Market Factors (I. C. C.) 3559
184	Exhibit 20, entitled "Details of Items of Expense in Operation of a Single Pipe Line from Texas to Joliet, Illinois and certain misc. data," in Peoples Case before Ill. Comm. Com. No. 21170 (I. C. C.) 3567
185	Rate of Return Study—Part I (F. P. C.) 3576
186	Rate of Return Study—Part II (F. P. C.) 3724
187	Comparative Statement of Combined Profit and Loss for 8 months ended August 31, 1939 and 1938 (I. C. C.) 3784

No.	Exhibits.	
188	Proforma Comparative Balance Sheets Annually at Dec. 31 from 1939 to 1954 and after liquidation (I. C. C.)	3785
191	Revision of Chart 8 and Supporting Schedule No. 12 in Exhibit 185 (F. P. C.)	3841
192	Revision of Chart 10 and Supporting Schedule No. 14 in Exhibit 185 (F. P. C.)	3849
193	Revision of Chart 11 and Supporting Schedule No. 15 in Exhibit 185 (F. P. C.)	3855
195	Revision of Chart No. 12 of Exhibit 185 (Defts.)	3859
196	Revision of Chart No. 14 of Exhibit 185 (Defts.)	3863
197	Study of Yields at Market Prices of Electric Operating Utility Preferred Stock and number of times dividend and prior requirements are earned, Based on Market Prices for week ended Nov. 17, 1939—Income for latest 12 months (F. P. C.)	3867
198	Earnings—Price Ratios of Electric Operating Utility Common Stocks and Per Cent of Gross Income available for common stocks, market prices for week ended Nov. 17, 1939, annual income from latest quarterly reports (F. P. C.)	3869
201	Photostat of Voucher 55810 (6/21/38) $5105.15 to Ralph E. Davis, Inc. (F. P. C.)	3871
202	Data on Sales, Revenue and Customers—Peoples Gas Lt. and Coke Co. (Defts.)	3877
203	Residential Electric Service in United States (Defts.)	3885
204	Commonwealth Edison Co. (Customers, Consumption, Revenue, and Rate) (Defts.)	3885

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4023.

No.	Exhibits.	
205	All Mortgage Bonds of Domestic Electric and Gas Utility Companies traded on New York Curb September 15, 1939 (Defts.)	3886
206	All Preferred Stocks of Domestic Electric and Gas Operating Utilities paying full dividends Listed N. Y. Curb (Sept. 15, 1939, Prices) (Defts.)	3888
207	Gross Operating Revenue and Total Net Available for Fixed Charges After Depreciation of the Gas Departments of the Three Utilities Distributing Gas in the Chicago Area (Defts.)	3891
208	Gas, Electric and Telephone Utility Companies serving City of Chicago (Defts.)	3893
209	Bonds, Debentures and Notes of Natural Gas Companies holdings by public (Defts.)	3895
210	Revision of Page One in Exhibit No. 141 (Defts.)	3901
211	Revision of Page One in Exhibit No. 142 (Defts.)	3902

Motion for Interim Order reducing rates, filed November 7, 1939 3903

Defendants' Pleas to Jurisdiction and Reply to motion for Interim Order filed December 18, 1939 3914

Conditional Answer to motion for Interim Order, etc., filed Dec. 18, 1939 3920

Memorandum Opinion, filed July 23, 1940 3925

Order reducing rates, entered July 23, 1940 3942

Motion for stay of order of July 23, 1940, filed August 8, 1940 3947

Objections of Illinois Commerce Commission to motion for stay of order, filed August 9, 1940 3958

Order granting in part and denying in part motion for stay of order of July 23, 1940, entered August 8, 1940 3960
Application for Rehearing, filed August 16, 1940 3961
Order denying Rehearing, entered September 6, 1940 3993
Certificate to Record 3994

PAPERS FILED IN U. S. COURT OF APPEALS.

Petition for Review, filed September 11, 1940 3997
Statement of Points 4009
Stipulation as to Printing 4020
Supplemental Stipulation as to Printing 4022

I

Order staying order of Commission 4025
Opinion, Evans, J 4026
Judgment 4041
Clerk's certificate 4042
Orders allowing certiorari 4043

Vol. I, pp. 1 to 646; Vol. II, pp. 647 to 1310; Vol. III, pp. 1311 to 1976; Vol. IV, pp. 1977 to 2672; Vol. V, pp. 2673 to 3031; Vol. VI, pp. 3033 to 3417; Vol. VII, pp. 3419 to 3902; Vol. VIII, pp. 3903 to 4043.

973 FLOYD C. BROWN, recalled by defendants, testified as follows:

Direct Examination by Mr. Morgan.

(September 6, 1939.)

I am Vice President and General Manager of defendants and have testified heretofore in this case. In the month of May, 1930, I was made Vice President and General Manager of Continental Construction Corporation, predecessor of defendants and was placed in general charge of the construction of the pipeline. I continued in that position through the construction period and have held the same position throughout the period of defendants' operations.

The first major problem confronting me, before any of the design, engineering, or even the office work could be undertaken, was the necessity of assembling an organization. The office staff had to be supplemented by construction engineers and field forces to supervise the construction work. In going about the assembling of the organization, I was offered the privilege by the participating companies of going into their engineering and operating forces and selecting therefrom, either on a temporary or permanent basis, such of their men as I felt would be qualified to undertake positions of responsibility with the new company.

I did not have an intimate knowledge and acquaintanceship of the men, their training or their experience, who were associated with the other participating companies that I had of the men with whom I had been associated in the Empire and Cities Service Companies, so I naturally turned to the latter group of people with whom I had been associated, for the selection of executives, sub-executives and other men who were to occupy positions of responsibility with this new company. I had been with the Empire Companies for approximately 13 years and had what I feel was an important part in the building of that organization during that period of time. A number of the important men in that organization were brought to that company through my efforts; and I had had considerable to do with the training and development of those men, having that intimate knowledge of their technical training and their experience and knowing the degree of responsibility that could be placed upon them. I had the advantage of being able to

hand-pick men who were capable of undertaking, with a minimum of supervision, important responsibilities to be imposed by this new project.

You have asked me a question which, as I understand it, divides itself into two parts, first, as to how I went about selecting men, and, second, the purpose I had in mind in selecting and building up the organization. In response to the latter question, I would say that of course it was of primary importance that we select the men who had the greatest experience and training, qualifying them to undertake the responsibilities in connection with the design and selection of material, testing the material and assembling of material for the construction and inspection of the line. We were employing new engineering principles so we had to draw upon that talent which would give us the greatest degree of security in the selection of men, having in mind the objectives toward which we were aiming. We also had in mind in the selection of these men, the need for picking men who were not only qualified to undertake the engineering and construction responsibilities, but also men who would be fitted by training, experience and temperament to undertake or take over the operating responsibilities when the line was finished.

974 We knew from experience of other lines that the men who construct the line, who are familiar with every valve fitting, every foot of pipe, and with the peculiarities encountered in construction, are the men who are best qualified to operate these facilities when the construction work is completed. So, we had an eye looking toward the selection of men qualified not only as construction engineers but as operators, in order that we might pass through that transition state from construction, completion of construction, to the operation of tuning up the line and putting it into operating service.

There is difficulty involved in the selection from the whole engineering profession of the right men to do the particular jobs in connection with the construction and operation of a pipeline system such as this. It is hard to explain without going into minute detail why any good construction engineer might not be thoroughly capable without prior experience of building a satisfactory pipeline. That, however is not true. Good engineers are not difficult to find and it is not difficult to employ good engineers. It is hard however to find good construction enginers experienced in the technique of properly designing and laying pipelines; and that

difficulty increases as the diameter of the pipeline increases, and as you commence to inject new and untried theories into the design of a transmission facility such as we undertook in this pipeline.

In assembling our organization, we tried to take into account all those elements and factors and to meet the needs of our company by the selection of the right man and assigning him to the proper position.

The plan we followed worked out surprisingly well. As we neared completion of the construction work in the fall of 1931, we started dividing the responsibility of our supervisory and executive staff in both the field and the office. The change-over did not come about over night. It wasn't anything that took place suddenly or that was not contemplated. We had very definitely in mind how the operating organization should shape up; and we started transferring the responsibility of the men gradually from construction to operation as we neared completion of the line and progressively we started moving gas through the line; first for a purging, and then for a testing of the line itself. As the gas moved progressively up the line, we had it available for testing the engines and tuning them up, putting them on performance tests so that these men who had done the assembling of the machinery and who were familiar with every nut and bolt that went into the assembly were the men then who were best qualified to undertake the tests and finally take over the operations.

They passed through that period there of tuning up not only the machinery but the line itself, taking care of leaks, settling of the backfill and rocking the river crossings. Gas finally was moved into Chicago for a sort of tuning up on a temporary basis of the Chicago District Pipeline Company's equipment. In the beginning, we only put one station in operation until we could start building up the load putting on more stations and engines, so that these men had an opportunity gradually to work from construction over into operation. Now it was about the middle of 1932 before we had fully completed all construction; but we arbitrarily set as the date for terminating the construction as a matter of accounting, the calendar date of January 1, 1932 and fixed that date as marking the termination of construction and the starting of operations, although many of the
975 men and a good part of the organization continued to give decreasing percentages of their time to construction and increasing percentages of their time to operation

until the construction was finally completed. We did not have to go on the outside to bring in operating men to man the organization. We passed from the construction organization into an operating organization with all the knowledge and familiarity that the organization had acquired during the construction period, just as we had planned to do.

I do not mean to convey the impression that I myself selected every man for the construction organization. Obviously, that would not be good organization as I view it and I doubt that my knowledge of the type of men best qualified for many of the routine field jobs would be as good as that of some other men who had more intimate contact in The Empire organization with men of that type.

So what I attempted to do was to concern myself primarily with the selection of the executives, the sub-executives and the staff who were to be engaged in supervisory work. I did not however cease to have an interest in these other men, but having satisfied myself with the selection of the staff men, I then attempted to outline to them what I felt to be my responsibility and the company's objectives and policies and tried to instill in them a sense of responsibility that I expected to repose in them. That is, I wanted them in turn to accept the responsibility of selecting the men who were to work under them to whom they expected to assign other responsibilities and that was progressively carried clear on through the organization.

As an example, I think with possibly one or two exceptions, I did not personally select the superintendents for the compressor stations. I did know every man selected, however, knew of his training, of his qualifications and experience and I had a judgment as to whether that man would be qualified or not; but in the selection of those men, as far as possible, I leaned towards the recommendations of the compressor station superintendent in Chicago who was to have charge of those men and tried to delegate as far as possible, or make him feel that responsibility as far as possible by letting him select his own men. There were disagreements and there were differences of opinion, but in very few instances was it necessary for me to veto the recommendations of that man.

Now the same thing applied to the pipeline division, telephone division and the production department. Having selected the head of each one of our operating departments, field and office, I then tried to delegate to the man selected

the responsibility of picking his key men. You can see therefore that I did not mean to convey the impression that I had selected the 500 men who form our operating company.

As a matter of fact, the work of building this organization was done primarily by me, then by the members of my staff, and then in turn by the members of their respective staffs clear on down through the organization, so that the time of a num[illegible] of us was devoted to the selection of the organization. [illegible] this point, I want to say in order that the record may reflect the fact, that the key men, the staff men in the organization, were as much responsible for the success attained by these companies as any success I might be claiming here for the picking of this organization of which I think so highly.

976 As an example of the way we work, since we last met in Chicago, one of our station superintendents, the superintendent of number 3, died very suddenly. That immediately called for the replacement of that superintendent, either by a man immediately under him at the station or the transfer of a man within the company from wherever we felt that we might have that qualified man available. If he is not within the company, we have got to go on the outside. It is seldom that we ever—and I do not recall a single instance where we ever have—go on the outside to pick a man for an important position, as important a position as a station superintendent. Those men are trained from within the organization.

When this superintendent died, we immediately considered the list of men which we have and which we are constantly considering, the men who are available for promotion into other positions. Mr. Kesinger, Mr. G. M. Davidson, Mr. Walt Davidson, and I reviewed the list. They first conferred and decided upon their recommendation as to who was to fill that vacancy. That man was considered and agreed upon. We then considered who would fill the vacancy created by the promotion of that man. Well, progressively, before we got through, the result was that about 5 men were advanced within the company. We try to build and train for advancement our own men, not only because we feel that it has certain incentive value, so that these men may know that they are in line for promotion but these men have been definitely viewed for a period of months or even years and are considered to be second or third string men in line for promotion to positions of re-

sponsibility. In the meantime, we have seen to it that they are acquainted with the responsibilities which they are to assume when that date of promotion comes. While it is not easy to overcome the loss of a man of that capacity, we nevertheless are trying to follow an organization procedure which will enable us to build and take care of emergencies such as that when they arise.

In a system of this character involving the dangers and the technical difficulties that are involved in the operation of a business like that of this pipeline system, all positions are responsible positions. The degree of responsibility may be relative, and we may be inclined in our routine discussions, to speak of our supervisory staff as being the men of responsibility in our company. It is true we like at least to feel that we occupy some position of responsibility in the company. Yet, we are not unconscious or unmindful of the responsible position played by practically every man in the company, whether he is charge of 10 men or whether he is responsible for only his own efforts.

Take a pipeline welder, engaged in work typical of the work we are now doing, where we are welding sleeves over these rubber couplings. These men are welding a heavy plate of steel, a drop forging, to the pipeline while the pipeline is in operation. This pipeline carries pressures up to 710 pounds per square inch, with a daily flowing capacity of 210,000,000 cubic feet per day, and is continued in operation while this welder is raising the wall of the pipe to a fusing heat to weld the sleeve to the pipeline. That is not work that we can entrust to an ordinary welder or that the average welder can do without the most careful training, observation and experience as a welder's helper. When we are raising a pipeline under 710 pounds pressure to a fusing heat to weld a sleeve to it and keep the pipeline in operation, we are playing with something that is more dan-
977 gerous than dynamite. Yet, that is an every day operation that we are performing. It is also performed frequently where leaks occur. Not only is this a part of our operation in this construction program of welding sleeves through flood valleys to try and reinforce the line, but that is typical of the type of man that I say occupies a responsible position with this company. It requires not only training but it requires experience—experience that is not attained on the average pipeline— This organization has to have men thoroughly acquainted with the hazards of operating at these pressures. The improper closing of valves,

closing them in the wrong order of sequence, when we are working on shut-outs, and so forth could cause the explosion of the line or an explosion in the station, endangering the property of the defendants and the lives of many people.

These men can not be picked up from the outside. We can get good gas men, yes, but we can't get men who have received the training and experience that this organization has had from the date the pipeline was started, through the some 9 years of its operation. These men are not just ordinary men. When we have a shut-out or an emergency arises as a result of a break in the pipeline and air gets into the pipeline, extreme care must be exercised to see that the air is excluded and that the line is thoroughly purged of air before it is placed back in operation. If this air is allowed to become locked up in the pipeline with the gas when the repair is made, we then carry an explosive mixture which may let go in one of the compressor stations or in the home of one of the consumers. We are dealing with a dangerous commodity and we are dealing with pressures and facilities here which do not occur in the ordinary natural gas pipeline transmission system.

I have already spoken briefly of the way in which we attempt to keep in mind promotion of our men and the training of these men through progressive steps. We try to ascertain or determine from the traits shown by a man and his apitude for the type of work whether he is best suited for the office or for field duty, whether he seems to have more apitude and a greater possibility with the pipeline department or whether he is of that mechanical type that would prove more efficient around the compressor station. Having ear-marked these men, we try to put them in a line of training progression, so that they are fitted for these positions when vacancies occur and we like to think of them as second and third-string men. They might even be serving as assistants, or they may not bear any title but are under the scrutiny and close observation of our supervisory staff. It is not infrequent that we will get together with our field and office supervisory staff and talk over the qualifications of these men, how they are coming along and whether they are ready for promotion when vacancies occur.

There are two channels through which we get men into the organization in the first place. I do not mean to con-

vey the impression that every man we have is a technically trained man and yet I doubt that there is an organization along the natural gas transmission system which so thoroughly stresses the importance of employing technically trained men and insisting upon technically trained men occupying supervisory positions as have these companies. I am intimately acquainted with the top executives of practically every natural gas pipeline company operating in the United States today. I have supplied to those companies a good many men from my organization when I was with the Empire Companies. Some of my men were attracted to some of those companies since that time through larger salaries or promotions which I could not give them in my own organization. I know
978 the field men and the office men in those other companies. It is not hearsay. In addition to that, I have had occasion many times to talk with the top executives in these other companies as to the type of men that they are employing, the type of men that they are training, their training methods, where they secure their new material, and have been frequently requested to explain to them how we go about securing our graduate engineers and training them for these positions of responsibility. Our men have attracted attention throughout these other organizations because of the methods we have employed. They are not employing those same types of training methods. These exchanges are not purely casual. Quite often they become a matter of a roundtable conference at our Natural Gas Conferences each year. We have two of those. There is a general session to the fall and one in the spring. The spring conference is confined to natural gas activities; the fall conference to both natural and artificial gas. We make a systematic effort to find out what the other companies are doing in the matter of training their own personnel in order that we may take advantage of whatever improvements they make. (Objection of Commission's Counsel to entire line of questioning overruled.)

We select our new material as far as possible from the engineering graduates of schools bearing good engineering reputations and these men are brought into the company. We take in a new group each year. It may be only a few men, it may be a larger number, depending upon our needs. These men are selected carefully and

brought in each year, but I think it is not necessary to go into detail for as I recall this question of training junior engineers has been discussed in the past. They are placed in a training course with the company and this course extends for a period of two years. After having had a foundation of engineering and two years of schooling in the intricacies of the companies' operations in field and office, they are then in a position to take positions of responsibility and to progressively work up through to supervisory positions as vacancies occur.

We have in our organization occupying staff positions men who have been through this type of training known as the junior engineering course. If for any reason we were to lose our organization and were confronted with assembling another organization to take over the operation of this plant in the period of 30, or 60, or 90 days, we would have to shut down the pipeline. I do not think that there is any reasonable probability of the company losing either 500 men or 50 of its most important men today and being required to replace them in 30 days. (Motion to strike the witness' testimony by counsel for the two Commissions denied.) We could not possibly man this pipeline with new men whether they be routine laborers or operators or executives in 90 days and put it in operation again. We could carry some gas and we could start limping along in operation; but we are dealing with high pressures, with mechanical facilities extending over 900 miles here. The very lack of knowledge of the facilities themselves would prevent inexperienced natural gas operators from putting this system into effective operation in 90 days. It would demoralize the whole organization. It would not take months but years to really qualify these men to become efficient in the handling of the company's facilities and its properties. Our men have grown up with this company and much of their value is attributable to their experience and knowledge that they have acquired in the operation of this company's properties. These field men know every foot of the pipeline. They know the treacherous and dangerous conditions, where they are and where they have to be watched for, the areas where, after a heavy rain, the maintenance staff immediately has to go out and patrol the line to take care of wash-outs and backfill the line where the cover has been washed off. The areas through

Iowa are particularly bad in this respect. We have other areas that we know are subject to flood and where 979 other types of danger make it necessary for the men, through their experience gained over years, to get out onto these properties and to get out quickly. These men have acquired that knowledge in the past 9 years. They know the farmers, the farmers' phone numbers and they know in the event of an emergency they can get in touch with the farmers and muster forces of an additional 100 or 200 men that we can not keep on our payroll to take care of the emergency when it arises. They know the public supervisors and have established contacts which enable them to obtain the road equipment, the trucks and so forth, and that is available to us only through knowledge and experience gained over this period of years. A new staff could not come in and take over the property and do all these things.

The same thing is true in the office. Our office staff knows the companies' history, contracts, their negotiating problems and litigation. It would be impossible to move in a staff of men who could come in and take over the books and affairs of the company who are not experienced with the history of the company. So part of the value of our men has been gained through long years of experience and knowledge acquired through those years of the companies' affairs. (Objection by Commission counsel to Examiner's ruling as to time within which to complete corrections to transcript, and objection by counsel for Illinois Commerce Commission to the number and character of corrections submitted by Company counsel.) I do not think that I would want to undertake the responsibility of assembling an organization of the character of our present organization and report to the owners of the company that it could be accomplished without a cost of ~~$200,000 or $300,000~~. It would mean a substantial reduction in the operating capacity and the efficiency with which the facilities could be handled. The facilities would be manned with men inexperienced in the companies' properties and it would mean the elimination of operation with experienced men and pursuing a cut and try process of drawing a man here and there until the right men had been found. Now this is always expensive. The turn-over of any organization is expensive and there is always the danger of serious accident and dam-

age. I would say it would cost a very substantial sum of mony. (Objection by Commission Counsel overruled.)

At this point, counsel handed to the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company—Personal Data." At the Examiner's direction, the document was marked Exhibit 129 for identification.)

I have before me a copy of Exhibit 129 for identification. That document contains a skeletonized personnel record of a number of the top executives and the supervisory staff of these two companies. Let us take page 1 and analyze it very briefly. We set out in line 1 the name of the man, the position he occupies, his age, education, that is the field in which he was educated, the time which he has been with the company, the experience in the present line or with this character of work. The facts dealing with experience are broken into three parts, showing the position, the employer, and time of employment. It also shows the different positions he occupied at subsequent dates; the term "employer" covers all of the companies down to and including his present employment and the length of time with each employer is set out in the last column. It will be noted that with few exceptions, the men composing our organization are below the age of 50 years, although they have had the experience set out in this exhibit. In my judgment, there is an advantage of a substantial character in having an organization manned with young men who are conversant with their duties. These men with their technical training and years of experience and who have not ac-
980 quired in the majority of cases an age of 50 years have many years of usefulness before they reach a retirement age, so that the company will continue to enjoy the advantage of their mature judgment, experience, and long association with the company.

This list does not show all of the men who can be classified as executives and staff men. It is extremely difficult in the preparation of a list of this character to know just where to stop. We reach a point where we are trying to terminate the list and the next man below is just as important as the last man included and yet we have to stop somewhere, otherwise, we would list almost the entire personnel of the organization. I did not realize until I was looking over the list last evening that the

name of our chief accountant, Roy Miller, who is to appear as a witness this week had been left out. Yet he is equally as important in this organization as any man on the list. Some of these men are the same men who have testified as witnesses in this case and others will appear as witnesses. (Objections by counsel for the two commissions overruled.)

In my judgment, the fact that we have an organization selected, trained and assigned as to its members to the particular positions which they occupy clear through the entire organization gives an added value to the properties of these companies over what they would have if we merely had the physical properties and had no such trained organization but had the task of training the organization before us.

Cross-Examination by Mr. Booth.

I have been in direct charge of the operations of these companies practically from their formation. I have been responsible for the operation of these organizations. The companies have a president. He sits as the Chairman of the Board of Directors but as to the operating problems, the day to day operating problems of the companies, I decide them. I do not think I could say offhand what policies he personally decides. Matters that are not decided by the organization in Chicago are usually passed upon by the board of directors rather than by the president acting alone. The president of the companies does not draw a salary from either of the companaies. Ordinarily in any organization it is not the president of the organization who decides its principal day-by-day important operating problems. I have testified that I have a good deal of experience and know the operations of other natural gas pipeline companies, and that I was acquainted with the officials of those other companies. I have not attempted, in my testimony, to state what the functions of the officers of those other companies might be. The function of the president of a corporation varies a great deal in different companies. In some companies the president, because of the nature of his training and experience, will confine himself to the financial and corporate side of the business. He may have and often does have a vice president and general manager who is an engineer and trained by experience

for operations and the president will delegate to him the operating responsibilities. In other instances, the president may be the operating man and he may fortify himself, or supplement himself, with perhaps an attorney or with a man who is acquainted with the corporate, legal and other side of the business. I do not think the duties of the president of these companies have ever been outlined by the board of directors. As I have said, his function to a very large extent is to sit as the chairman of the board of directors, when matters which are of sufficient importance to take to the board of directors are under consideration.

These companies maintain a retirement plan which we recently instituted. I think it was as of September 1, 1938. This grew out of a composite effort engaged in by the secretary of the company, the tax counsel, the chief engineer and the general superintendent. I had something to do with trying to help formulate a policy which would be applicable to the needs of the company. I am not prepared to say why this plan was not put into effect in 1933.

981 Writing of retirement plans was not actively engaged in in 1933. I think that the efforts of the government in trying to provide retirement plans has stimulated the interest of corporations with the result that there has been an epidemic, if I might so term it, of retirement plans and methods by corporations in all lines within the last two or three years. We were fortunate in the writing of our plan in having available the many, many plans of different corporations which had been written within the last two or three years. The interest of our employes was stimulated. There was a clamor, a demand, for this type of protection. It is no different than group insurance. It is a plan which the companies have all felt had certain definite tangible value in helping to maintain a satisfied group of employes.

It is true that the companies up to December 31, 1938 paid approximately $9,000,000 in dividends on their common stock and during that same period they set aside only approximately $30,000 for a retirement plan to take care of its employes. None of the expenditures of the two companies in connection with the training of the employes was charged to capital account. These expenses were charged to operating expenses. These companies laid out no money for the training and experience of their men obtained prior to the time they became employes of the two companies.

(At this point EXHIBIT 129 was offered and received in evidence without objection.)

982 J. A. EMERY, a witness for defendants, testified as follows:

Direct Examination by Mr. Morgan.

(September 6, 1939.)

My name is J. A. Emery. I live in Montclair, New Jersey. My place of business is in New York City. I am senior vice president and member of the executive committee of Ford, Bacon & Davis, Incorporated, an engineering firm. This firm was established in 1894 and conducts all classes of engineering.

I received my technical education at the Massachusetts Institute of Technology in civil engineering. For several years after leaving college, I was engaged in engineering design and management of construction principally for electric railways and railroads. I began my connection with Ford, Bacon & Davis, Inc. in 1898.

Our firm is engaged in engineering of all descriptions, including surveys and reports, design, supervision and inspection of construction, management of construction, contracting, financing, valuation, and purchase and sale of properties for both public utilities and industrial concerns. I should have included also the operation of business enterprises including natural gas companies in the operation of which they have engaged rather extensively. They have appraised all kinds of properties, railroads, electric railways, electric light companies, gas properties both artificial and natural, industrial properties, and commercial properties. These valuations have had to do with intangible as well as tangible properties.

The connection of my firm with the natural gas business began to the best of my recollection in 1907 when they made an extensive examination of the natural gas properties owned by the Philadelphia Company which operates in Pittsburg and in the vicinity of Pittsburg. These natural gas properties included production properties in Western Pennsylvania and West Virginia, together with transmission lines. The report was made for a syndicate who were considering the purchase of the company. They afterwards made the purchase.

The firm was employed in about 1910 to make a study of the introduction of natural gas into Baltimore. In 1913,

a report was made on the Union Gas Company which was located principally in the southern part of Ohio and is now a part of the Ohio Fuel System. In 1920, the firm began a series of valuations of the East Ohio Natural Gas Company, operating in Cleveland and in Northeastern Ohio; the Peoples Natural Gas Company operating in Western Pennsylvania and West Virginia and Hope Natural Gas Company operating principally in West Virginia.

In 1925 a preliminary survey and later a complete survey were made of the gas project in Alberta Canada to serve Edmonton and the surrounding district. The firm made complete designs for this system, supervised and managed the construction and had charge of its operation for a couple of years thereafter.

In about 1926, the firm engineered and supervised the construction of a line from the Monroe, Louisiana gas field to Baton Rouge. That line was followed by lines to St. Louis, Memphis, Birmingham, and Atlanta. On all of these, the firm made the designs, inspected the con-
983 struction and in the case of the Interstate Line in Louisiana and of the Southern Natural Gas Company which ran to Birmingham and Atlanta, it conducted the operations for several years.

It also engineered, supervised the construction of and had charge of operations for several years of a line from the Texas Panhandle to Denver, known as the Colorado Interstate Line. It also made a report on the West Texas Gas Company and its affiliated company, the South Plains Gas Company, which take their gas from the Texas Panhandle field. The firm also made a survey and report of the natural gas market in Philadelphia and in northern New Jersey, the latter covered practically the whole northern half of the state which is the territory served by the Public Service Electric & Gas Company.

In connection with the work of my firm and in my capacity of one of the chief executives of that firm I have to do with the operating problems such as load building, and things of that character. In the course of my work over the years, I have had occasion to examine the operating records of natural gas companies, I am familiar and can interpret that kind of record. I have not been intimately familiar with the Panhandle gas field in Texas. The firm has not done a great deal of business in connection with it and I am only generally familiar with it. It is my un-

derstanding that it is one of the greatest gas fields that ever was discovered.

I am familiar with the pipeline company known as Natural Gas Pipeline Company of America and its companion company Texoma Natural Gas Company. This system obtains its supply of natural gas altogether from the Texas Panhandle Field and sells it principally in the Chicago district, but to some extent in the State of Illinois, west of Chicago, in Iowa, Nebraska and Kansas.

For the past 18 months, I, with associates, have been engaged on a study of these companies for the purpose of making an estimate of their going concern value and of considering the reasonable rate of return which would attract the capital necessary for their construction. I have studied the record of these companies and their history for the purpose of determining those factors which I deem pertinent to the consideration of their going concern value and rate of return. They have made available to me their books of account and their official records. Through my staff, I have made a detailed examination and inquiry into the facts to which I am about to testify.

From the investigation, I note that this pipeline system did not start out about the first of the year 1932 with a full load of natural gas. That is not unusual. In fact it would be unusual if one should start off with a full load. The company must convince the prospective customers that its service will be reliable. There is always a reluctance on the part of people using one fuel to change to another and the advantages of the change have to be very definitely pointed out to them. That is not a thing that can be accomplished over-night. It takes several years to build up a load. In the case of these companies, it took about 4 years to do that.

I have had occasion at different times to make a great many different studies of industries, population, and so forth, in Chicago and in the Chicago district but I have no very intimate knowledge of the conditions on those parts of the line in Western Illinois and across the states of Iowa, Nebraska and Kansas, where Natural Gas Pipe-
984 line Company disposes of a part of its gas. My knowledge is not more than general.

I have treated the two companies in my study as one system, they were projected and constructed as one system; and they are under the same management. They are largely owned by the same interests. The pipeline is

dependent upon the producing company for its supply of gas to the extent of 75% thereof and the producing company is dependent upon the pipeline for its market. They form one continuous system. While the pipe line takes ¼ of its gas from another company, the Canadian River Gas Company, it is dependent on Texoma in the sense that the Texoma company guarantees the future supply of the pipeline.

I have examined the corporate set-up, the assets, the operating expenses, fixed charges, revenues, and attendant facts connected with the operation of these companies from the beginning of their operations and have had the figures carefully analyzed, so as to be familiar with each of these companies and its operating costs and expenses. Our analysis was for the purpose of determining, first, the going concern value and second, the rate of return to which these companies would be entitled.

When the materials for a property of this kind are assembled and put in place, the property is by no means ready and able to furnish the service for which it was projected. It is necessary to go through a considerable amount of promotion and expense before the property can be brought to a position of standing on its own feet in giving the efficient quality of service that is necessary to justify it financially. This means that an operating organization must be formed, drilled and perfected, that the forms and records necessary for efficient operation must be carefully worked out and tested, the physical property must be what I call "seasoned", that is hidden defects at the close of construction must be corrected and the full volume of business for which the line was built must be attached.

I consider going concern value to be the difference in value between the inert physical property as it would stand at the close of construction or reproduction and the property in full operating momentum with an efficient trained personnel, thoroughly seasoned and with the full complement of business attached. I want to add that I think in considering the going concern value of a property of this kind, the character of the territory in which it is located should be taken into account, that is, whether or not it is thriving and has prospective stability. In other words, I think that a pipeline system equipped to bring natural gas to Chicago and prepared with its organization and other things necessary to bring natural gas to a center of popula-

tion like Chicago should be worth more than a pipeline built out in the semi-desert area of Arizona, even though it had the same type of physical property, the same investment in the property itself and both were taking gas from the Texas Panhandle field.

It would be extremely uneconomical and impractical to start out with only the facilities necessary to handle the load for which a market is obtained in the beginning of operations and then add to the capacity from time to time as the load is built up over the years. After a pipe is once laid, the size of it can not very well be increased, of course another line can be laid, but if the line is laid only large enough each year to take care of the increase in business each year, you would have a very uneconomical sys-
985 tem. The more economical, as well as the more practical, thing to do is to provide the facilities at the beginning which are necessary to handle the load which it is expected to acquire over a reasonable period of time. There is expense involved in the building up of the load to the full capacity of a pipeline system like that here under consideration. In the first place, the mechanical cost of attaching the business must be taken care of. By that I mean, the soliciting of customers, the negotiation of contracts, the advertising, and the changing over of appliances, to name some of the items of expense.

Also, there are the fixed charges on that portion of the line so provided and the operating expenses which can not be proportioned to the volume of gas but are proportioned to the size of the physical property. By the latter, I mean the operating expenses which are incurred from the beginning and which continue on regardless of the quantity of the load as distinguished from those which are added as the load goes up and the volume of gas handled is increased. There are certain operating expenses which have to be assumed in full when the operation starts. The fixed charges to which I refer as being constant and which involve an actual outgo of money to the companies in connection with facilities provided before they are required to handle the full load include return on investment or rather interest on the investment, depreciation, and taxes and dividends whatever return is called for on the remainder of the investment in excess of the bonds. I do not mean interest that accrues as a matter of bookkeeping because the money is tied up but only the interest that is actually paid out. In figuring up the costs to these pipe-

lines for providing the facilities in advance, in terms of money actually paid out, I have given consideration to interest, depreciation and ad valorem taxes. In the case of these companies, the period of load building extended over a period of about 4 years, that is from the first of 1932 through the year 1935.

In connection with the attaching of customers or persuading prospective customers to purchase gas, it is necessary to set up forces of negotiators, a new business department, and the higher officials of the company must devote a certain amount of their time to such work. There are traveling expenses and supplies but the greatest item is that of contributions for changes in appliances which are necessary to induce customers to change over to natural gas.

I have been furnished with a statement of the actual expenditures during this 4-year period and the commitments made during that 4-year period in connection with their load building. This is in such detail as is reflected in their operating expense accounts. These companies actually paid out in the solicitation of business by years the following amounts:

1932	$ 86,105
1933	219,149
1934	889,060
and 1935	373,477

the latter amount includes $65,471 paid out in 1936 but contracted for in 1934 and 1935. The total is $1,567,791. In my opinion, these amounts aggregating the amount just stated, represent a portion of the expenses to which these companies were put to obtain its going concern value.

The other direct costs that are chargeable to the attaching of business, or the making up of the going concern value, are the fixed charges on that portion of the physical property provided in advance of the full attachment of the business for which they were built. I mean the interest, depreciation, and ad valorem taxes on the property of these companies that made up the project. In arriving at
986 the proportion of this interest, ad valorem taxes, and depreciation and costs of operation, chargeable to the cost of attaching business in helping to make up the going concern value, I considered that a fair standard for judging the capacity of the property could be obtained from the load carried in the years 1936, 1937, and 1938 when the load had been built up to what I call the capacity of the line.

That capacity, if running full all the time, would have

bec a 210,000,000 cubic feet per day, or 76,650,000,000 cubic feet per year. These companies never actually ran that much gas. They actually ran in the 3-year period I have taken an average of 92.48% of that quantity and I have considered the amount they actually ran to be the standard of full load. It is not possible for a natural gas pipeline company to deliver 100% of its capacity every day of the year as a practical business proposition because of the variations of the demands of the customers. For instance, a househeating load is comparatively large in the winter months and amounts to nothing in the summer months; also there are days of the week when the industries are utilizing more gas than other days and variations of that sort.

I have taken this 92.48%, which was the per cent of the total capacity of the line that it was able to deliver during the three years after it was first loaded, and have used that as the standard. However, the original capacity of the line was not 210,000,000 cubic feet per day but 175,000,000 cubic feet per day, or 63,875,000,000 cubic feet per year. In determining the extent of the excess facilities over those actually in use in each year of the load building period, I have compared the actual volume of gas delivered with the capacity based on the load factor which was found to be practicable in the years 1936, 1937, and 1938. That is, I have taken the capacity of running full in the load building period and have multiplied that by 92.48% to obtain the practical maximum capacity of the line and then I have compared that figure with the actual volume of gas handled in each of the 4 years. In other words, I have used 92.48% of the rated capacity of the line as the basis of comparison and have compared the volumes actually put through the line to that basis.

In 1932, I found a lag of 51.98% which means that practically 52% of the property for that year had been provided in excess of the business attached that year. In 1933, the lag was 56.75, in 1934, 21.42%, and in 1935, 3.63%.

I have ascertained the interest that was actually paid out for money which went to provide those facilities of the system. I got these figures from the records of the company. The interest paid out in 1932 amounted to $3,666,350, in 1933 to $3,625,079, in 1934 to $3,598,329, and in 1935 to $3,474,732; a total for the 4 years of $14,364,490. I have applied to those figures representing the interest actually paid out each year the percentage of lag in attach-

ing business during the same year, with the result that for the year 1932 I took 51.98% of the total interest paid out, which resulted in $1,905,769 paid out on account of facilities provided in advance of the load. By the same process, I found that the interest paid out on account of facilities not yet in use for the year 1933 was $2,057,232, in 1934 $770,762, and in 1935 $126,133, making a total for the 4 years of $4,859,896.

987 I then determined the ad valorem taxes paid out on account of facilities owned by these companies each year during the same 4-year period.

(At this point, counsel handed the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Cost of Attaching Business—Witness J. A. Emery" and asked that it be marked as an exhibit for identification. At the direction of the Examiner, this document was marked Exhibit 130 for identification.)

By ad valorem taxes, I mean taxes generally on the estimated value of the property, that is taxes that the various taxing bodies levy on the property itself as opposed to production taxes, franchise taxes and other taxes of that character. I find that these companies paid out, during the 4-year period of the load building, ad valorem taxes as follows:

in 1932	$301,776
1933	301,629
1934	270,558
and in 1935	289,193, a total for the 4 years of $1,163,156.

I applied the same percentages of lag I had already determined and which I applied to the interest payment for each of the 4 years and in that manner arrived at the amount of taxes which were paid out on facilities provided in advance of the loan. I found the taxes on facilities not yet loaded for the

year 1932 to be	$156,863
1933	171,174
1934	57,954
1935	10,498, making a total for the 4 years of $396,489.

I then made the same character of calculation on the depreciation as determined by Mr. Biddison in his recent survey of the property and referred to in his testimony.

I mean the actual viewed depreciation of the physical property as determined by Mr. Biddison. The basic figures were furnished me by Mr. Campbell, the Secretary of the company, who started with Mr. Biddison's figures. I have assumed that the depreciation was uniform from year to year from the beginning of operations until the time of Mr. Biddison's inspection, consequently, I have divided his findings as to depreciation by the number of elapsed years. That amounts to $386,529 for the whole property as he found it for each year.

I applied the same percentages of lag to these depreciation figures as I did in the interest and ad valorem tax figures and obtained as results for the

year	1932	$200,918
	1933	219,355
	1934	82,795
	1935	14,031, making a total of $517,099.

988 Viewed depreciation is defined as the loss in value of the property, and even if it was not paid out-of-pocket it all constitutes a liability which will have to be paid some day. It is a loss which is incident to the natural deterioration of the property. That loss occurs largely without regard to whether or not it is being used to its full capacity or to only a percentage of its capacity during the earlier years of its history. This is the item of depreciation which, in computing the value of the property and approaching that subject from the standpoint of reproduction cost new, must be deducted from that reproduction cost new in computing the value.

Now this other item of cost of operating facilities provided in advance of attaching business, I computed in the following manner; there are certain operating expenses which must be incurred when operations begin in substantially as great amount as later when the line is loaded. I considered that the proportion of such expenses in accordance with the estimated lag in load is attributable to going concern value. These were operating costs that covered the unused as well as the used portion of the capacity during this period of load building.

I took the production department expenses, other than gas royalties and taxes on gas produced, the mail line expenses, the telephone department expenses, and the gen-

eral expenses as recorded, other than taxes. I did not include any of the expense of operating the compressor stations although a part of that might reasonably have been taken. My reason for not including any part of the compressor station expense was that there may have been some items which in part should have been omitted and I considered that by omitting entirely the compressor station expense and the gasoline plant expense I was fully making up for such items and arriving at a fair figure. I found that during those 4 years, those items of operating costs that I have taken into account are fairly uniform in amount year after year except in the first year when they were substantially higher. The first year, they amounted to $1,072,759 as compared with $835,903 the next year and comparatively the latter amount for the following years. That higher cost the first year was due to non-recurring expenses which, although I do not have the details, must have been in the nature of perfecting the personnel, preparing the operating forms and procedure, and seasoning of the property.

By "seasoning of the property", I mean consummating the back fills, making provision against wash, as it appears after the line is completed and placed in operation, riprapping, and other measures which have to be taken at the river crossings, and alterations in the compressor machinery, and items of that kind. I did not try to pull out these items attributable to seasoning from that large operating expense of the first year but left them in and applied the percentage of lag to the whole amount. Had I been able to pull out those items which represent seasoning I would, instead of applying the percentages of lag to them, have put them all in as a part of going concern value. So by leaving them in this item the amount of the cost is reduced by the difference between the percentage of lag and 100 per cent. (Motion by Commission Counsel to strike the above testimony denied.) I stated earlier that this difference in the aggregate amount of these charges, which do not vary with the load between the first year 1932 and succeeding years, was made up of non-recurring costs which I have attributed to seasoning. Then I went into the record and took these items one by one and pulled them out, that is all of such charges instead of just the 51.98% attributable to lag would have been properly included as cost of obtaining going concern value.

That is all of the excess of such expenses in 1932 over the corresponding increases in the succeeding years 1933 and 1935. To get an exact figure, I would take the average expenses for the three years as the normal amount, although the differences are not large.

Applying the same percentages of lag to these op-
989 erating costs, I find that the operating expenses incurred on account of facilities provided in advance of attaching business for the

Year	1932 to be	$557,620
	1933	474,375
	1934	165,066
	1935	29,757, making a total for

the 4 years of $1,226,818.

As appears in line 1 of page 1 of Exhibit 130, the items attributable to the capacity provided in advance of load are interest, taxes, depreciation, and operating costs, amounting to a total of $8,568,093. In that amount is included no interest that was not actually paid out on account of the facilities provided in advance, nor were there included any taxes not actually paid on account of such facilities. I have used the figures representing the actual physical depreciation of the properties not yet in use during the load building period.

As I have already stated, there are other expenses that would have to be incurred in connection with the building up of the load and putting the project on a going basis or putting the wheels to turning in the sense that I have expressed it here.

The organization, as we find it today, has a value must greater than would be that of any crowd of men that could be assembled hurriedly. It has had the benefit of a number of years' familiarity with the property, with the territory, and with the customers. These men know how to work together. This excess of value is reflected in the efficiency of operation. In other words, an efficient organization can operate the properties more cheaply than a less efficient organization. It is not possible to assemble an organization of this kind without substantial expenses and that expense has got to be borne by someone somewhere down the line. I am acquainted with some of the personnel which operates these properties. I have made a point of meeting and sizing up the principal executives, including Mr. Brown himself, and my associates have done the

same thing. I have known Mr. Brown, Mr. Kesinger, and other operating heads and executives over the years. I heard Mr. Brown's testimony here today concerning the type of organization that he has. His testimony coforms to my understanding of the type of men who are employed by these companies.

In my opinion, it is an excellent organization which adds a value to the properties of these companies over and above the value which those properties would have without the organization. It has that value because it would cost money to reproduce it. It would cost money to put it where it is. It adds a value to the use of the property because the latter can be operated more cheaply and it certainly would be taken into account in the matter of exchange, purchase and sale by a purchaser who was interested in buying the property. Of course I cannot tell how much.

To make an organization of 600 men work efficiently together, their duties must be carefully defined and understood. That is accomplished by means of instructions which are sometimes worked out piece-meal. Often it is done by instruction books for various departments. I understand that it has been done for this company entirely in piecemeal. To obtain the greatest efficiency of op-
990 peration of the physical property, records of performance have to be maintained very much similar to laboratory records. These records have to be prepared in such a way that they can be understood and that the results can be obtained from them readily so that they can be summarized for the constant inspection of the higher officials. These companies, I find have over 300 forms used in their operations and the very process of designing and perfecting these forms would be expensive and it makes a great difference in operating expenses whether these forms are efficiently designed or not. If the forms are so designed that false motions are made. It means a multiplication of such motions day after day throughout the year.

It is not possible for a business of this magnitude to anticipate and prepare in advance all the books of account, tax records, performance records of the machinery, ad the procedural directions that become necessary as the business is developed and those operating it become acquainted with its details, or a lapse of time and con-

siderable expense are required. Of course if you previously had exactly the same kind of company that was performing as well as you would expect it to perform, where special attention had been given to the subject, you could obtain a satisfactory series of forms at the beginning, but no two companies operate alike and the only way in which the best system of forms and records can be devised is to study it out. (Objection by Commission Counsel.) I have made estimates of this cost but no such estimates as I would feel that I have checked over carefully enough to present. (Objection overruled.) I did not say that I have made estimates in other cases, but I meant that I have made an estimate in this case, but I have not checked it over sufficiently to be satisfied enough with it to present it here. In other cases I have made estimates of a specific value to that element. It would cost a substantial sum of money to reproduce these forms, records and procedural documents. I consider that the location of the company in a thriving, growing territory gives it an element of value, but I have not attempted to estimate how much that would be. But I have always tried to consider a value as a single figure and not that in the case of a property there could be a value for one purpose or another. I am aware that the purpose of determining value in this proceeding is solely for the purpose of rate-making. It is my personal opinion that a company is entitled to an element of value for rate-making purposes only insofar as it has contributed to that condition, which a company often does by fostering the territory, that is, building up industry.

Based on my experience and observations over all these years, I do not think this pipeline system could have overcome the difficulties of loading its pipeline within the period that was required had it been built for a less favorably situated outlet than that of Chicago and those places along the line where it has markets at so small an expense. It could not have been loaded in the same time at the same expenses.

The valuation of the going concern element of a company is a matter of judgment. There is no exact method of calculation. In arriving at your judgment or opinion of such value, it is customary and proper to assemble, weigh, and hold in view all the evidence relating to such value. In this case, I have analyzed the going concern value as I

see it, and I have taken such items as I felt could be definitely determined from the records of the company as having been paid out. That gives me the cost of such elements. Now "value" is not cost, but I have chosen to leave out all the other elements of value which I have enumerated and estimated the value of the going concern value of this property as the sum of those figures which I have derived as the cost of certain parts of the going concern elements. This sum aggregates $8,568,093 and in my opinion, the going concern value of this property is not less than that. That is the figure indicated in Exhibit 130, page 1, the item in the lower, extreme right-hand corner. (Motion by Commission Counsel to strike above testimony overruled.)

Based on by experience in the design, construction and operation of pipelines and the problems that are encountered in connection with such operations and with the loading of the pipeline or building up the demand upon it to the point where it can not be loaded any more, it would cost as much if not more to reproduce the elements entering into my judgment just expressed as to the going concern value of these properties. (Motion by Commission Counsel to strike above testimony overruled.)

991 I obtained the figures as to the sales and the operating expenses set out on pages 2 and 3 of Exhibit 130 from Mr. Campbell, the secretary of the company. The analysis shown on page 2 and page 1 are my figures based on the figures furnished to me by Mr. Campbell.

Cross-Examination by Mr. Booth.

The evidence that I have given is that the cost of these particular elements is as stated on that exhibit, based on that cost for certain of the elements, I should estimate the value of all of the elements at not less than that amount. In other words, that is the proper and reasonable amount of going concern value that should be allowed for these companies in this case. The going concern value includes not only those elements set forth in Exhibit 130 but also the elements I have discussed. I made no estimate of either the actual cost of those other elements, the cost to reproduce them, or their value in use. I cannot say without more consideration whether I would still reach the conclusion that the going concern would be $8,568,093 if

these other factors not included in Exhibit No. 130 had not existed. As to whether I will say that these other elements form a small or large part of the 8½ million dollars, I do not know what is meant by "large" or "small". In this figure of $8,568,093, the cost of assembling the organization, the accounting procedure and the favorable location had nothing to do with the size of the grand total cost of attaching the business. It includes simply the items contained on page 1 of Exhibit No. 130. I would not reach my conclusion that the Company was entitled to 8½ million dollars independently of these other factors, nor would I if I had not made the study shown on Exhibit No. 130. I spent approximately 18 month off and on in making this study of going concern value.

My study of this going concern value has continued over a period of 18 months off and on, not continuously. I think the time actually spent would represent 5 or 6 months of continuous work, not by myself but by members of my staff. I am familiar to some extent th the operations of other large pipeline companies that have as their source of supply the Panhandle field in Texas.

I am not familiar with any of the details of the Panhandle Eastern Pipeline Company's operations as to the cost of building up its load. My only information about it is that it has taken much longer to load it than it has this line, if it is fully loaded now. Other large pipeline companies which have the Panhandle field as their source of supply are: the Colorado Interstate, the Northern Natural, the Cities Service, the Panhandle Eastern and the Lone Star Gas Company. I have made no study of these lines from the Panhandle field. I did take account of the expense of the Alberta Company where the company began from scratch.

I spent considerable time developing the theory upon which Exhibit 130 is based. I did not discuss it with Mr. Hamilton. Nobody suggested to me the use of these various items which make up Exhibit 130. It is a development of the work we have done on this subject extending through a good many years. That exhibit constitutes a summarization of the work we have done on the subject of going concern value for these companies. In my judgment, that Exhibit 130 and the testimony explaining that exhibit constitutes the principal or major basis for my conclusion that this company is entitled to a going concern value in the amount that I have stated.

Cross-Examination by Mr. Slaff.

I am acquainted with Mr. Hamilton of course. He has testified in this case. I have known him a good many
992 years and know his professional standing, the type of work he does and so forth. In reply to your question, in which you have stated what Mr. Hamilton testified to as a reproduction cost of these properties and the amount resulting from the deduction therefrom of the depreciation as observed by Mr. Biddison, and in which you ask me that if Mr. Hamilton had come in with a reproduction cost new estimate of $75,000,000 instead of $57,000,000 approximately, and a reproduction cost new less depreciation estimate of $70,000,00 instead of approximately $54,000,000, I will say that—if I had no opportunity to go into Mr. Hamilton's figures in detail and were asked to base my judgment on his reputation and on my general knowledge of his methods in respect to such properties as this, if he said that in his opinion the value of the physical property was the figure you named—this addition of mine should be made for going concern value. I think Mr. Hamilton is a competent man to testify for reproduction cost new in this type of proceeding.

Questions by the Examiner.

If a competent witness testified that the reproduction cost estimates would be $75,000,000 and less depreciation would be $70,000,000 and those figures applied to the physical property alone, I would still add $8,500,000. If the figure of reproduction cost should be $10,000,00 less depreciation of $15,000,000, leaving a reproduction cost figure less depreciation of $85,000,000, the grant total cost of attaching business might be different to the amount I have determined in that the depreciation might be different and if those amounts applied to the physical properties alone, I would still testify that the amount of $8,568,093, or a higher amount, should be added as an element of going concern value. It should be added to any authentic valuation of the physical property.

I will furnish counsel with a statement of the cases in which I have testified in the last 10 years.

Redirect Examination by Mr. Morgan.

If the same expense or cost had been paid out for interest, for soliciting customers, for taxes, for operating expenses, not dependent on volume, and the same depreciation had occurred annually as that set out in my Exhibit 130, then my judgment would be, without regard to the value of the physical property, that a going concern value allowance would have to be added to the value of the physical properties, whatever that value was found to be. In stating that I have considered all of these elements as adding to the going concern value and in stating that the going concern value should be at least $8,568,093, I mean that that is not all of the going concern value that I think exists here, but in arriving at that amount, I have confined it to that amount because I can only identify that amount as actual expenditures that occurred in connection with producing this property. My testimony has been that the going concern value is not less than the amount stated and not that it is that exact amount.

993 S. L. MILLER, a witness for defendants, testified as follows:

Direct Examination by Mr. Morgan.

(September 6, 1939)

My name is S. LeRoy Miller. I am the chief accountant of Natural Gas Pipeline Company of America and of Texoma Natural Gas Company, under the supervision of Mr. Campbell I supervise the accounting.

I personally prepared those figures which I have heard revealed here by Mr. Em and which appear on page 3 of Exhibit 130. I prepared those figures under the direction of Mr. Campbell and took them from the books and records of the company.

(EXHIBIT 130 was offered in evidence and was admitted over the objection of counsel for the Commissions to each of whom the Examiner granted an exception.)

994 R. J. WALLACE, a witness for defendants, testified as follows:

Direct Examination by Mr. Morgan.

(September 7, 1939)

My name is R. J. Wallace. I live in Tulsa, Oklahoma. I am in the oil and gas business and I conduct a brokerage business for the purchase of oil and gas properties.

I have been engaged in the oil and gas business either as a producer or as a broker since 1907. I have been actively engaged in the brokerage business as well as an operator for over 10 years. In 1907 I went to work in the oil fields at Bartlesville, Oklahoma, as a night pumper and roustabout. from 1908 to 1909 I was employed by the Prairie Oil and Gas Company in their civil engineering department on tank construction and pipeline construction. From 1909 to 1911 I attended college in the winter and in the summer worked at surveying and as a tool dresser, and in general oil field work. I secured some oil and gas leases for companies and individuals during that time. In 1912 I was elected registrar of deeds in Washington County, Oklahoma, the county seat being Bartlesville. In 1913 I resigned my position as registrar of deeds to accept the position as assistant superintendent of land and leasehold development of the Quapaw Gas Company and associated companies, which later became the Empire Companies. My work consisted of acquiring and supervising the taking of oil and gas leases by purchase and direct from the land owners in the states of Alabama, Mississippi, Arkansas, Louisiana, Texas, Oklahoma, Kansas, Colorado, and Wyoming. From 1915 until 1919 I was with the gas division of the Empire Companies and was made superintendent of gas pipelines in the Cushing district. In addition, I purchased all gas production properties and acquired gas leases for the gas division. From 1919 to 1920 I was manager of oil and gas operations in Louisiana for the joint account of the Empire Companies, the Barnsdall Oil Company, and H. Y. Foster interests. My work consisted in drilling wells, purchasing leases and selling leases to help finance the project. From 1921 to 1924 I was located in Billings, Montana in charge of oil and gas operations for the Barnsdall-Foster Company, a corporation owned by

the Barnsdall Oil Company and H. V. Foster interests, operating in the Rocky Mountain States. I leased direct from the fee owners and from the Government under Government permit, and supervised the drilling of wells and the sale of leases and production. In 1924 I sold a half interest in the properties of the Barnsdall-Foster Company to the Mid-West Refining Company, a subsidiary of the Standard Oil of Indiana, by which they took over the management of the properties. In 1925 I resigned from the Barnsdall-Foster Company and organized the Record Petroleum Company, a company in which I owned a substantial interest. In the latter part of that year I sold a half interest in the Record Petroleum Company to the Mid-West Refining Company and surrendered the management to them. I then engaged in the brokerage business and the business of a drilling contractor.

In 1926 and 1927 I secured leases and permits in various fields in Wyoming, Montana and New Mexico for my own account, and later sold these properties during the years 1927 and 1928. In 1928 I moved to Tulsa, Oklahoma 995 to engage more actively in the brokerage business and in valuation work.

In 1929 I devoted practically the entire year to the consumating of two large transactions and to the investigation of other properties. From 1929 to 1932 I conducted a brokerage business, and also developed a gas property east of Kansas City, Missouri, in connection with which I drilled a number of wells and built a pipeline system. From 1932 to 1935 I conducted a brokerage business in Kansas, Oklahoma and Texas, and sold my gas wells and gathering system east of Kansas City. From 1935 to 1936, in addition to my brokerage business, I served as vice president and general manager of the Signal Oil Company, a producing company operating in Kansas and Oklahoma, in which I represented a bank of Tulsa. This company had become indebted to the bank which made it necessary that they place the management under its direction, and it asked me to act in that capacity.

In 1936, after drilling some additional wells, I sold the producing properties and some of the undeveloped leases for enough to pay the bank's indebtedness and turned the property back to its owners. From 1936 to 1938 I drilled a number of wells in Kansas—oil wells and gas wells—which resulted in the building of a gasoline plant on the properties. In the latter part of 1938 I sold my oil inter-

ests and have since been engaged entirely in the brokerage business.

The two or three transactions which occupied the entire year 1929, to which I have referred, involved first the sale of an undivided half interest in approximately 492,000 acres of undeveloped leases scattered through Kansas and Oklahoma, belonging to the Amerada Petroleum Corporation, to the Standard Oil Company of Indiana, and next a sale to the same company of the McMan Oil Company properties. This was a producing company which had both producing and undeveloped properties in Texas, Oklahoma and Kansas. The consideration for the purchase of the half interest of the Amerada Petroleum Company by the Standard of Indiana was $10,000,000. The consideration involved in the sale from McMan to the Standard, which was a stock merger, was approximately $12,000,000. (Objection by Commission Counsel to testimony relating to consideration for purchases overruled.) Both of these transactions involve properties, though not very extensive properties in the Texas Panhandle field. During that same year I was delegated to attempt to sell the Foster Petroleum Company. I took this property up with the Standard of Indiana but we did not consummate the transaction. My contract in this deal set out that the consideration would be somewhere between $10,000,000 and $20,000,000, that is to say that was the range of prices involved in the negotiations.

I think I have had occasion to become acquainted with and acquire knowledge of the market conditions in the Texas Panhandle field. I first became acquainted with that field at the very beginning of operations when I was employed by the Empire Companies, and I remember when the first well was drilled in there, and wells at later times. Under my supervision we acquired acreage, checkerboarded and scattered acreage in that country, in the early development of it, suspecting that there was a large producing area there. I have since acquainted myself, in the course of my business, with transactions that have taken place, and with the values in that field. I know the present boundaries of that field. It is a generally accepted proven area. By the development that has taken place over these past
996 years it is now accepted as a proven field extending over portions of Potter, Moore, Hutchinson, Carson, Gray, Wheeler Counties, and I think a small portion of Hartley County. I have kept myself advised concerning the market

conditions prevailing throughout that field over the past several years. The gas leases scattered over the now generally accepted area covered by this field as it is usually outlined on the map, are not of uniform value throughout the field. There are many conditions prevailing in that field and I would not say that they are of uniform value at all. I would say the range of values would be from nothing up. The reason I say that some leases in that field would have no value at all is that there are areas where tracts of land for lease purposes would be absolutely condemned and would have no value. Dry holes have been drilled out over the area that is commonly included in the boundaries of that field as it is mapped by the public authorities and by the people dealing in oil and gas activities in that field.

This field is a very large one—approximately 125 miles long—so we are speaking of a very large area. In the eastern part of the field the land is divided into what I would call small tracts, in the gas area, 160-acre and 320-acre tracts. In the area are Carson, Moore and Potter Counties there are very large tracts of land under one ownership, so the sizes of the leases vary from very small tracts to very large tracts. In Moore and Potter Counties the tracts are large, a great many of them, but there are a few small tracts. In Carson County there are some large tracts and some small tracts.

When I say I have been engaged in the brokerage business I mean that I buy and sell properties or negotiate for the purchase of properties for a particular client. I mean, of course, oil and gas properties and leases.

My business has been to bring the seller and purchaser together on sales transactions involving oil and gas properties. Beyond that I try to study the needs of some of my clients or companies. Because of that knowledge and because I keep up with the different fields, sometimes I have been able to analyze their needs and present to them desired property and make the sale of such property as a broker. I create my own business in that way, receiving my compensation as a commission on the sales price, or a finder's fee or a commission for negotiating the purchase.

The principal factors in valuing the property in the Texas Panhandle field would be first its location as to the generally accepted proven gas area. Another factor would be its location within the proven area, as to the potential producing area—whether it is in a highly productive area, because these areas change rapidly. You find areas probably

within the center of the general producing area that, possibly on account of tight porosity, or something, are not within the high producing areas. The field has enough history at this time that we can very intelligently pick out those areas.

997 Another factor would be the conditions and terms of the leases under which the land is held, if it is a large reserve that you are looking over. In the history of almost all leasing, when a field becomes attractive or shows that it is a producing area, or might become a producing area, there is a great rush to secure leases; and almost invariably these leases are written at approximately the same time or within the same year. They are usually written for the same primary term, five years or ten years as the case may be, because when you give a proposition to one land owner it is almost universally the proposition that goes through the field. Therefore, the terms of the leases are very important. To illustrate, the dates of the leases being practically the same time, there would have to be a well drilled within the same period of time on each lease. A lease is really a franchise to produce oil or gas, and you have a right to drill and produce provided you do it within a stipulated time or the primary term of the lease. You do not have title to the oil or gas unless you actually produce it. From that time on you have as long as oil or gas is produced thereafter.

Another factor would be whether on a large reserve the acreage was well blocked. That is necessary for the reason that the offsetting or well spacing can be under the control of the owner or operator of this acreage, and can be done in a more uniform way. The withdrawals particularly of gas can be under the control of the operator and not subjected to close offsetting by others whose market might be entirely different from the operator or owner of the large block. There are other factors, the rock pressure and the decline in pressure. The field has enough history behind it so as to show its approximate decline and what you might reasonably expect to recover from the amount of gas or oil that you might estimate is under your land. I think those are most of the controlling factors.

Let us take, for the purpose of illustration, an ordinary oil and gas lease from A to B, covering a tract of 320 acres of land. Under the provisions of the prevailing oil and gas lease contracts as they were originally executed in the Panhandle, it is practically universal that that lease reads

that it is a conveyance of oil, gas, and other minerals for a definite period of 5 years or 10 years, or some other stated time that we call the primary term, and as long thereafter as oil or gas is produced from the premises. That provision is contained in practically every lease down there. Each lease also shows the amount paid for the lease. This is usually termed the original bonus. The payment of that bonus defers the drilling of a well for one year, after which, under further terms of the lease, the lessee is required to pay a delay rental for the privilege of deferring the drilling of a well for each additional year up to the end of the primary term of 5 years, if it be a 5-year lease. If at the end of the primary term the lessee has not drilled a well and is not producing oil or gas from the lease, the lease automatically becomes null and void. If a well be not started or the delay rental be not paid at the end of the first year the lease automatically terminates. I am familiar with what is known as the obligation to offset that goes with an oil and gas lease. If a well on the land next to the land on which you have the lease is close enough that your lease will suffer drainage, there is an implied covenant under the court decisions requiring you to drill a well equi-distant from the line of your lease as the well on the adjoining tract, so that the withdrawals from the two wells will
998 offset each other. This covenant arises by reason of the fact that the land owner in most cases reserves one-eighth of the gross production of either oil or gas that is produced from the lease; that the paying and protection of that one-eighth interest is a part of the consideration for the lease. If drainage takes place the land owner loses a part of that one-eighth and therefore the holder of the lease is required to drill such an offset well to protect his royalty owner's interest as well as his own.

It is not necessary that the production from the well on the lease equal that from the well on the adjoining land. The obligation is fulfilled if a well be drilled at a similar distance. Of course you might find a very large well on the land adjoining yours and you might drill an offsetting well which would turn out to be much smaller due to the unexplainable conditions underground that we do not know about when we start the wells.

The obligation is to drill the well at the same distance from the common line as the well on the adjoining tract so as to protect against the gas being drained from the lease over to the other well. The number of offset requirements

is dependent upon the number of offsets drilled around the lease. It is possible, depending upon the form or the shape of the tract of land covered by the lease, for a lease to become heavily burdened with offset requirements in the absence of some special contract to protect against that sort of obligation. If the owner of the lease be able for a consideration to negotiate with the owner of the land or the owner of the royalty interest an agreement by which he absolves himself from an obligation to drill offset wells, and by which the land owner or royalty owner accepts one well on the tract as sufficient development with an express provision that no additional offset drilling will be required, such an agreement would add great value to the lease. The extent of the drilling operations is a matter of great interest to a prospective purchaser. It is one of the controlling factors of the buyer of leases as the drilling of a well involves the expenditure of many thousands of dollars. If the lease or group of leases requires the drilling of a great number of wells, or might require the drilling of a great number of wells, he would certainly not pay much for the lease. The amount he would be willing to pay for it is directly affected by the extent of the burden of development that goes with the lease he contemplates buying, because the operator or purchaser of the lease expects to make a profit and therefore does not want to put in too much of an investment which might go beyond what he would consider is possible if he is to make a profit from it. To illustrate, let us assume that in some neighborhood or vicinity there are four leases which have been acquired by the same owner on lands belonging to the same lessor or different lessors, as the case may be. Let us say that one of those leases covers 320 acres, another 200 acres, another 160 acres, and the other 80 acres. If the primary term be 5 years it will be necessary to drill a minimum of one well to each tract in order to continue the lease beyond the 5-year period. Otherwise the lease would terminate as to each tract on which a well was not drilled and put on production during the 5-year period. This is the minimum drilling obligation. If wells were drilled offsetting these tracts it would be necessary, in the absence of some agreement 999 to the contrary, to drill offsets to protect against each well which the four wells to be drilled as a minimum happen not to offset.

(Mr. Morgan, counsel for defendants, made the following statement to the Examiner:

It is the obligation of the lessee to drill well for well in the case of offsetting wells, unless there is some special agreement to the contrary. The Texas law carries into the leases, although it is not written there in express words, what is termed an implied obligation to protect the royalty owner against having his oil or gas drained off to other wells. That requires the drilling of offset wells on the lease to protect it against that drainage. That subjects the owner of the lease to liability for the damage sustained by the royalty owner through that drainage, and in some instances the cancellation of the lease. That is not a matter of statutory law but of common law written into leases by the courts in passing upon the rights as between the royalty owner and the owner of the lease. If there should be two wells on adjoining property the owner of the lease might drill one well between them and thus protect the lease against drainage from both wells. However, it becomes an issue of fact under those circumstances. Down in Texas where we have juries in both equity and legal proceedings, there is always a jury's verdict on the facts staring the owner in the face when he takes a chance like that. That common law obligation obtains in other oil and gas states so far as I am advised. It certainly is in Texas a well established law throughout the state. The rule has been repeatedly announced by the Appellate Courts, including the Supreme Court of the state. I would not say that this obligation arises more or less frequently in the Panhandle than in other portions of the state.)

Direct Examination Resumed by Mr. Morgan.

You will find a rather uniform spacing of wells in all fields in Kansas, Oklahoma, and in other producing states. I think it has come about more by the getting together of the principal operators and establishing an offset distance. I can illustrate by a field in which I was operating in Kansas, the Burton field. In the north end of the field the leases were owned principally by one operator and he set the spacing at 40 acres per well. In the south end of the field where the owners of the leases were scattered, leases were divided up among a number of them, and the offset obligation became universal at 10 acres per well, and it did prevail at 10 acres throughout that almost entire southern area.

Questions by the Examiner.

In the Panhandle field the spacing varies. In speaking of oil wells, I think 10-acre spacing has been used up along the north boundary where the oil area is, but in the gas area, in the east end of the field, the density of drilling for gas is one well per 160 acres, and that holds true in some places in Gray and Carson Counties, but in Moore County and Potter County, where the land or leases are held in large tracts, they have apparently either agreed or, at any rate, are drilling one well to 640 acres. Now in all my experience in gas fields I have never known a place where 640 acres has been allocated to one well. It is the largest 1000 unit, I think, that I have ever experienced, but that seems to be the practice there. I do not believe there is any law in regard to that but it has become more or less universal there.

Direct Examination Resumed by Mr. Morgan.

That 640-acre unit may have to be reduced as necessity for additional wells develops through the decline in the field pressure. There is no question about that, in my opinion, because naturally when the pressure goes down the production will go down. This will require a great deal of additional drilling to keep up the delivery of gas from that area. I do not mean to say that in Wheeler County and in eastern Carson County, where the unit is usually 160 acres, that all the leases are drilled to that density. In many instances wells are drilled on 80-acre tracts; in other instances there are wells on 40-acre tracts, on 20-acre tracts, and even on 10-acre tracts.

Going back to the four leases we used in the illustration a little while ago, which we will call leases A, B, C, and D, which are all for the term of five years and in the same neighborhood either adjoining each other or close to each other, I have stated that it would require a minimum of four wells to retain the title to these oil and gas leases beyond the primary term. Until one well is drilled on each tract, it would be necessary, in order to keep the title to the oil and gas lease alive pending the termination of the primary term, to pay a rental at intervals of a year. This rental usually amounts to a dollar per acre. Now let us assume that the owner of those four leases makes a new

agreement with the owner or owners of the royalty interests underlying those leases, by which, for a consideration, it is agreed that one well will be drilled on the four tracts at a location to be determined by the lease owner, or by agreement that from that well the proportion of the total market outlet of the owner, which is properly allocable to the total of the four tracts of land be produced from one well, and that no other well shall be required in order to keep the four leases alive, or the title to the oil and gas reserves under the leases alive beyond the primary term, and also that there shall be no further obligation to drill offset wells. Such an agreement would add great value to these leases for the reason that you first have just the cost of one well to drill. You may eventually drill on four tracts, but that would be to suit your market conditions. The point is that you then acquire title to the oil and gas lease. Before that your title depended on the development through the drilling of one well on each tract. It would therefore add great value, in my judgment, to the leases.

The owner, by such an agreement,, becomes the proprietor of this oil and gas reserve and it does not depend upon the drilling of additional wells by the end of a stipulated period of five years, or ten years, as the case may be, and the payment of a rental in the meantime, failing in which the title will absolutely terminate. The owner of the lease is no longer subjected to damage by offsetting wells and underground drainage. The elimination of this hazard, in my opinion, adds to the value. Such an agreement would certainly be looked on with favor by one who was contemplating the purchase of the reserves underlying those leases.

1001 I have been requested to make a study of the leases belonging to Texoma Natural Gas Company in the Panhandle field for the purpose of determining their value at the present time. I was first employed to make this study about April 1, 1938, at which time I commenced to make an investigation into the reserves of that company. I have continued this study at intervals from the date last mentioned to the present time. I have made a very careful study of the holdings of that company. I have been on or in very close proximity to each lease. I have been to each of the gas wells. I have spent many weeks in the office at Amarillo and in the field, and have gone into the records of the company. I have studied each lease individually as to its terms, its location, and all things, both favorable

and unfavorable, that would go towards establishing, in my opinion, the value. I have taken into account the things that add to and the things that detract from the value of those leases under the existing conditions. I have renewed my study of the field, the history and age of Texoma's wells, the dates when they were drilled in, the original open flow and rock pressure and the latest official open flow and rock pressure. I have made a study of the wells surrounding the Texoma property on the lands owned by other companies in order to determine the potential productivity in the areas where Texoma's acreage is located. I have checked also the open flow and rock pressure in those areas, in fact I believe I have checked into most of the controlling factors. (Objection by counsel for the two Commissions overruled.)

I have been furnished with a description of all of Texoma's leases and have located those leases on the map at the time of or prior to my going on the leases themselves. I find the greatest majority, the largest percentage of Texoma's leases are located within the areas of higher potentials; that the leases are well blocked, under most favorable conditions to an operator; that the terms of the leases particularly are very favorable; that the drilling of wells to hold intact this reserve is a minimum, and to me it shows the result of a well-trained organization and a great deal of work to put this reserve in the favorable operating position that it has at this time.

By being well blocked I mean that the leases are substantially joined together or blocked together in one large block or in several blocks of large enough magnitude so that the operator or owner of those leases does have quite a control over the offsetting distances and he can protect his withdrawals from them.

The ownership map that has been offered in evidence shows that there are several or quite a number of tracts in northern Carson County that are comparatively small. I have in mind particularly those in what is known as the Burnett ranch referred to in the record. The fact that the company owns these smaller tracts ordinarily would raise a serious objection to the value of the lease for the reason as I have already stated, going to offsetting and drainage protection obligations. However, in this particular location it is generally accepted, and I feel a buyer of leases would accept it, as an area proven for gas only, because there has not been any oil developed in any of the wells. Gas

not be stored. It has to be produced from the wells as the market will absorb it. The fact that this acreage is surrounded by the large reserves of other gas companies whose withdrawals of gas are at a rate similar to that of the Texoma Natural Gas Company, and whose markets are controlled by weather conditions, industrial conditions, and other factors the same as the markets of Texoma, in my opinion puts that acreage in as safe position as if it were blocked acreage. I have therefore considered that factor in my treatment of those smaller tracts.

I find that the main body of Texoma's present reserves are so located as that they are readily accessible to a gathering system that would represent what in that field would be a minimum investment in gathering facilities in order to reach them. I have considered that factor. This field being as large as it is—of course the leases of Texoma from the west to the east end are many miles apart but the area over which they are scattered is a proven area and is so considered—the locations of the leases are very favorable for the construction of gathering lines, and their distances apart are not prohibitive from an investment standpoint, so from an operator's standpoint I find them well selected. There is a great advantage, providing the terms of the leases are favorable enough that the drilling of wells would not defeat you, in bringing together in one ownership a large number of leases, say several hundred, as of the time originally taken. Such an assembling of the acreage adds to the value over the aggregate sum of the values of the leases separately. This is particularly true in the Panhandle where the owner of a small lease is at the mercy of a local market which may be developed, a market that he did not himself create or control. Therefore, an isolated tract of 160 acres, or 320 acres, or even 640 acres owned individually would not have much value. It may be in a prolific area, it may be in the highest potential area, but still it would not be large enough to create its own outlet. Therefore, a large reserve or a number of leases under one ownership which could and would create an outlet to a distant market, has additional value over that of an isolated or individual tract. The owner of a large block of acreage can go out and seek, and probably find, an outlet which any one of these individual owners of small tracts would find absolutely out of the question. The reserves of Texoma are sufficient through the pipeline of

Texoma and Natural Gas Pipeline Company. They are of sufficient size, are located in proven areas, and would create an outlet to a distant market. In the case of Texoma I find agreements which have brought to its reserves the advantages pointed out in the illustration I discussed a little while ago. A great majority of Texoma's reserves are held under what they call consolidations. Through these consolidations they have brought about a grouping of their small leases or an understanding as to the development of their larger leases. Contracts have been executed between the land owners who won the royalties under the different leases and the company, consolidating under one contract or operating arrangement several leases under which agreement one well or two wells, as the case may be, will hold these leases in force as long as gas is produced from this one or these two wells. These contracts further provide that all of the leases within that consolidation are held in force even though they go beyond their primary term—and I find some leases that, under their original form, would have expired if it were not for these consolidations; that they will not be required to pay rentals to these land owners and are not required to drill offsetting wells. The owners of the land on which are the leases included in a particular consolidation agreement and on which wells have not been drilled, participate in the royalty from the well that has been drilled on some other tract whether he has any interest in the land on which the well was drilled or not.

1003 These contracts provide that the withdrawals of gas from that well shall be taken in proportion to the open flow and the acreage covered by the consolidation agreement as a whole, and the owner of a tract of land on which there may not be a well participates in the royalty in proportion to the ratio of his acreage to the whole. It certainly is a very very great advantage to an operator because he can defer the drilling of many wells until such time as his market requirements would justify the drilling of additional wells.

I find that of the 140,000 acres in Texoma's reserve there are over 98,000 acres that have been validated under these consolidation contracts. Now, the other acreage owned by Texoma, the larger part of it is held in large tracts like those of the Magnolia lease in Carson County and similar tracts. The Magnolia lease, for instance, covers 4,500 to 5,000 acres.

The record shows that no rentals will be payable on Texoma's acreage after the year 1940. That means that these leases will have all become validated or cured, to use an oil field expression, without the payment of further rentals, by reason of the fact that wells will have been drilled on the tracts covered by those leases, or on leases covered by consolidation agreements. That circumstance adds to the market value of Texoma's lease reserves in the Panhandle. When I said that the owner of the consolidation obtains an added value under the consolidation agreement by reason of deferring drilling obligations, I mean that his contractual obligations to drill wells for the purpose of keeping the lease alive or to prevent its termination at the end of the primary term and the obligation to protect against offsets in the case of this more than 98,000 acres covered by these consolidations, have all been discharged and he will not have to drill any other wells unless he wants to drill them to meet the purposes of his business. The placing of several leases, like the four I used in the illustration, under one consolidation agreement changes the value of the aggregate of the four leases taken separately. In fact the individual leases have almost completely lost their orginal identity. You will find in the consolidations tracts as to which the leasehold estate is in full force and effect although the original lease or leases covering such tracts have long since expired by their original terms. If they were operating under their original lease agreements these leases would no longer be in effect.

(At this point counsel handed the reporter a document captioned "Market Value of Leases of Texoma Natural Gas Company by R. J. Wallace" with the request that it be marked as an exhibit for identification. At the direction of the Examiner the document was marked Exhibit 131 for identification.)

I have classified into separate groups or classifications the acreage owned by Texoma Natural Gas Company as of June 1, 1939. I found it necessary to classify the acreage or reserves of Texoma in several different classifications, for the reason that they are in several parts of the field where different conditions exist. I made a classification for all of the acreage as of the present date, but excluded leases which Texoma will cancel during the years 1939 and 1940. I asked for a list of the leases to be cancelled by the end of 1940 and received such a list from the management.

1004 I have grouped Texoma's reserves into eight classifications and have designated those classifications A-1, A-2, A-3, B-1, B-2, B-3, C, and Sour Gas acreage.

In classification A-1 I have included what, in my judgment, is the choicest or best acreage. In Class A-2 I included acreage which I found had some factors which did not classify it as being the highest type of acreage, and so on down in each class. The sour gas acreage is acreage which appears within what is generally accepted as the sour gas area as of the present time. The sour gas line, or line between the sour gas area and the sweet gas area, has been designated and is generally accepted by operators and buyers of leases as being there, although the production comes from one common source. For some unexplainable reason there is a sour gas line there and I have excluded the acreage on the sour gas side of this line.

In classifying this acreage I have weighed all of the elements entering into the value, those elements that add to the value and that detract from the value of these leases. I have classified them into these eight classifications as a result of the exercise of my best judgment as to which classification they fall under in the light of all the factors. I have taken each lease separately and studied it as to its location, as to potentials and rock pressures, terms, conditions as to the location to other acreage, and have made a notation in my exhibit on each lease of these points and have placed it in the classification under which, in my judgment, it would fall in the light of those factors.

I have not included in the valuation of a particular lease on which there is a well or several wells the value of the well itself and the equipment belonging to the wall. I merely used the well as an index to me as to the potential area in which the lease is located, or the production from the well as an index to what a particular lease owner might expect to recover from this land.

In the classification and valuation of these leases I have not considered them as a part of the pipeline system composed of defendants, and have placed no value on them as if they were connected to any pipeline. I have valued them as if they were not connected to the line of Texoma. My judgment is that if this reserve

were available to be purchased by buyer that he could and would create an outlet to a distant market.

I have before me a copy of Exhibit 131 for identification. This exhibit was prepared by me and under my direction. I have set out in this exhibit the leases on which I have arrived at the fair market value as of the present time. I have taken each lease separately, shown the lease numbers as corresponding to the numbers of the books of Texoma, the date of the lease, the term of the lease, the book and page on which it was recorded, the name of the lessor, the county in which the lease is located, the number of acres, the description of the lands, and the number of wells, if any, on each lease, the date when the well was completed, its initial open flow and the rock pressure as set up on the records of Texoma.

I have also included the latest open flow and rock pressure observed on the books or records of the Texas
1005 Railroad Commission. I have shown the royalties payable to the land owners under each lease and whether or not the lease is now producing. I have put on each sheet the numbers of the other leases that are included in this particular consolidation, and I have also noted by remarks as to the location of the acreage with regard to the potential area and as to whether or not it was a part of a consolidation. I have marked on each lease my opinion as to its classification and value. I have placed in this exhibit one of these consolidation agreements of which I have testified as an illustration of what I am talking about. This copy I selected because it is a representative form of contract. Following that, I have briefed each consolidation, giving the county in which it is located, the number of the consolidation as set up on the books of Texoma, the name of the consolidation, the date, the total acreage, the number of leases included in the consolidation, and the lease number of each of those leases and the description of the lands. I have also made a notation as to the number of wells of which this consolidation agreement defers the drilling, by which I mean the number of wells that would have had to be drilled under the terms of the leases affected by the consolidation and which the owner is no longer obligated to drill.

This typical consolidation agreement appears between the tabs marked "Consolidations" and "Moore County." It is an agreement between W. H. Taylor and Texoma

Natural Gas Company. Under its terms, four leases originally executed by this lessor and finally acquired by Texoma were consolidated into one development unit. The first lease was dated April 14, 1926 and covered 608 acres; another dated April 19, 1926 covered 320 acres; the third dated August 16, 1929 contained 209 acres, and the fourth dated April 19, 1926 contained 125 acres in one tract and 160 acres in another tract. While there were four leases affected by the consolidation these four leases in fact embraced seven different tracts of land as of the time Texoma acquired it. That is, they came to Texoma under seven different assignments. That was due to the fact that the land covered by the original lease had been subdivided and a part of it assigned to one owner and a part to another before these leases were finally acquired by Texoma. By the terms of paragraph 2 of this consolidation agreement no further delay rentals were required to be paid on the whole 1,422 acres after the drilling of the first well. Over on the next page, in paragraph 6, we find this provision:

"There shall be no obligation on Texoma to drill offsets to any gas well which may be drilled on or produce gas from neighboring lands; but Texoma may drill additional wells, if, as and when it so desires."

That is the provision about which I was talking when I referred to the advantage and the added value to the reserve covered by one of these consolidations over the aggregate sums of the values of the separate leases not so consolidated. In the record is an exhibit numbered 68 from which I show the Examiner the location of the lands covered by that consolidation agreement. First is the lease of all of section 21 belonging to J. B. Wheatley in Moore County. This is located at the place to which I am pointing on the map. It is a long tract of land, the description of which I have just stated. Right down in that section, in the area colored red below the letters "O." and "R." in the spelling of "Moore" County appears this 608-acre tract. The second tract is the E/2 of Section 19, Block M-1, Moore County, containing 320 acres. This tract adjoins the 608-acre tract. It is immediately south of the east end of the first tract. The
1006 next tract is the west 82.3 acres of Section 18. It is the tract immediately adjoining the first one on the northeast corner and is a long narrow tract. Next

is the north 126.7 acres of the west 251.7 acres of Section 17, a tract which adjoins the first tract on the extreme east, running north and south, and is a very long narrow strip. The land covered by this lease is 126.7 acres at the north end of this narrow strip. The fourth lease covers the south 125 acres of the west 251.7 acres of Section 17 and is the south portion of the same tract off of which the north 126.7 acres above mentioned is cut. And in that lease, quite far removed, a mile or more away, is the NE/4 of Section 20, Block M-1, in Moore County, which is a small square located at the place to which I am now pointing.

As a result of that consolidation agreement those tracts have been brought together, in this irregular shaped form here, under one consolidation, with the provision that Texoma shall not be required to drill but one well on the whole 1,422 acres, and that no offsets would be required. If that were in separate leases it would be a very dangerously shaped lease because there are so many boundaries exposed for offsets. A purchaser, in viewing that lease, would take that circumstance into account, and he would place a higher value on it because of its having been brought under a consolidation than he would if it were still under the four leases separately.

A while ago I spoke of the Magnolia fee land which is all under one lease. I could indicate it approximately on this map, but if you wish a description I will have to check that from the records. It is in Block 4 of the I&GN RR Co. Survey in Carson County. It is in the part of the west side of this larger block shown on Exhibit 68, at the place I am here indicating. It is colored in red on this map.

I will now go through the exhibit and explain it briefly. The first article in the exhibit is an introductory statement in which I have included a description of the field itself, its location, approximate number of acres considered to be proven sweet gas acreage, and a general statement as to the location of the Texoma leases. Reference is made in this introduction to the development of conservation measures in connection with the operations of stripping plants through which for several years the gas was being exhausted at a rapid rate and wasted to the air. Reference is also made to some of the factors which

I have considered in arriving at my judgment as to the value of the leases.

The next subdivision is under the tab called "Summary" in which I have taken the leases of the Texoma Natural Gas Company and classified them as to developed leases and undeveloped leases for each county, showing the total acreage under each classification and the total value of the acreage under each classification. I have also shown the total acreage by counties and the total value by counties. This is followed by a recapitulation showing the total number of acres under each classification and the value thereof. I arrive at a total valuation of $13,288,552.10. This appears in the summary of the details shown in the exhibit.

I have also included an index alphabetically of the leases by counties. This index shows the name of each lessee, with the lease numbers that will correspond with each sheet in each county. The lease number is 1007 indicated over on the last column on the right-hand side of the index page.

Coming back to my summary sheet, it will be noted that I have classified under the classification A-1 in Moore County 30,931.86 acres. In my opinion, the market value of that acreage at the present time is $3,866,482.50. This is an average of $125 per acre. This is the average value which I have placed on all of the A-1 acreage under my classification of these reserves. I have found A-1 acreage in Moore and Carson Counties. In Carson County I placed under this classification 24,195 acres which, in my opinion, has a value of $3,033,375.

After weighing the various factors, I have classified some of this acreage as Class A-2 for reasons already stated. In the light of those factors it is my judgment that this A-2 acreage has a value of $100 per acre. The Class A-3 acreage, in my judgment, has a value of $75 per acre. The Class B-1 acreage has a value of $50 an acre, the Class B-2 acreage has different values ranging from $20 to $35 per acre. Some is valued at $20, some at $25 and some at $35 an acre. The acreage valued at these three different prices of acreage classified under B-2 is shown by individual leases. On acreage classified as B-3, I place a valuation of $15 as to a part of it and $10 as to the other. The explanation is found in connection with the discussion of the particular lease. On

the acreage classified as C-1 I have placed a valuation of $10 or less per acre. I have given no value to the sour gas acreage for the reason that although it has a value for certain purposes, entirely different factors and conditions govern as to the valuation of that acreage and I have not made a study of those factors in the sour gas area. I have given no value to any acreage not a part of the sweet gas reserve.

In each of these classifications and in each of these valuations I have weighed all of the factors that I have stated here, and exercised my very best judgment as to the classification on which each tract or each lease or consolidation of leases would fall. In my opinion this sum of $13,288,552.10 to which these valuations add up is the reasonable market value of these leases at the present time.

Cross-Examination by Mr. Slaff.

There may be an arithmetical error in making up the total valuation placed on the A-2 acreage in Moore County. I can recheck that but I will have to go through most of the leases in order to do so. I applied the $100 an acre to each lease when I classified it and then totaled each lease. These errors, if any, I feel quite certain are attributable to the fact that some of the acreage figured out in fractions and I may not have taken into account the fractions of acres. My regular work sheets are not with me. I will check the matter during the noon hour.

I testified in the rate case before the Kansas Corporation Commission in July, 1931. The Cities Service Company was involved in that case. Also before the Illinois Commerce Commission in July, 1932 for the Peoples Gas Light & Coke Companay. In January, 1935 I testified before the Kansas Corporation Commission for the Cities Service Company. I believe this summarizes all the rate cases in which I have testified. In all these cases I was testifying on the valuation of leases.

1008 *Cross-Examination by Mr. Booth.*

I have made no studies of the life of the reserves in the Panhandle field in connection with my work on these valuations. At no time in connection with my work have I made any studies of the life of the reserves. As to whether I

consider the life of the reserves a factor in determining the value of the leases, I consider the producing history of the well, which does indicate to me something of its life, but I would not venture to deal with the lives of the reserves. I am not an engineer.

The life of the reserves is a factor that would be considered, I think, by the purchaser of leases. He would have his engineers make up an estimate of their judgment of the life of the reserves. However, I do find that in cases where you have on a property a well which was drilled several years ago, and which has been producing for several years, and its original flow and rock pressure indicated a certain amount, and at this time it would show a small decrease in rock pressure or open flow, it would indicate or give you some idea of the life; but I could not venture to say how long it would produce or how much gas it would produce in cubic feet.

I think that is a factor which a prospective purchaser of leaseholds would consider in determining the price he might pay for the leaseholds. I do not believe that the total amount of natural gas in the field would affect the market value of the lease. It might affect the percentage of earnings that the owner might expect to make if he were delivering that to a market at a price. The price condition would have to be in there. You have to have a price for the gas recoverable from the reserves per acre; you have to establish that. I think the extent of the reserves does affect the price. I did not calculate the amount of recoverable gas per acre when arriving at my valuation. I did not give any consideration to that item because I do not know the amount of recoverable gas. I could not say that all of the factors which I considered were stated by me in response to questions directed to me this morning by Mr. Morgan. I believe that I know pretty well the minds of the sellers of leases and the minds of the purchasers of the leases. I have been in constant contact with them for a number of years and have taken into consideration those conditions that I feel, from my experience, that I know something about. You cannot break it down into dollars per acre, but I have considered those things along with the entire work that I have been doing.

In response to questions by Mr. Morgan I indicated some of the factors which influenced the market value of leaseholds. Those are the factors which I considered in arriving at the market value of these leaseholds shown in Exhibit

131. There were probably other factors which I did not enumerate. There are things that you see but I cannot just explain what they are from an operator's standpoint which put one lease in a little better favor than another —accessibility and so forth. There are factors that I considered other than those that we have put in. I do not know that I could name or explain just each one. I believe lease for lease I can pretty well do that, generally.

I think I stated the main factors. I do not recall any other factors at this time, but if we will go through this lease by lease I may find that I have made notations of other factors that I considered. I do not recall all of the factors that I named in response to questions by Mr.
1009 Morgan. You might have that read to me. Every factor I named did have a great bearing on the proper placing of this acreage in the classification to which I assigned it and on its value. As I recall most of the important factors were brought out. I cannot say now that they were all brought out. I am afraid I will have to have those factors before I can answer your question as to whether or not I have named all the factors I considered. I will state that some of the factors that I had to use in arriving at my conclusions reflected in Exhibit 131 were the conditions of each lease as to its terms and the acreage contained therein; those leases that had wells on them, the conditions and the producing history of them, each well, from the time they were drilled in up to the present time. I had the history of each and every well and considered that as a factor.

The acerage as being blocked in with the other acreage owned by the Texoma Natural Gas Company, the consolidations of which I spoke and on which I spent a great deal of time, I considered very important factors. The accessibility of the acreage generally was another factor. I mean that although it covers a large area in miles from the west to the east, yet it is so located that it is readily accessible to the gathering system that might be built to market the gas. I considered also the potential of the area in which the acerage is located and indicated by the wells drilled not only on the leases of Texoma but other lands. I have a record of every well in the field within these areas showing the open flow and rock pressure, and the amount of gas marketed from every well as well as the amount of gas in cubic feet marketed from the wells of Texoma. By the potential area I mean the productivity of the area as indi-

cated by the wells drilled within that area. This is an important element in the minds of the seller and the buyer. I think the factors I have named are the principal factors that I considered in there.

There probably would be other elements that would enter the mind of the buyer and which he might consider of importance, but I think the things I have mentioned would enter into his mind. Those are the things that you would have to know in determining the market value of the leases of Texoma. I know that the purchaser would consider these factors and he might consider others, but I do not know what they would be. These are the factors which I consider to be most important. I do not think of other important factors at this time. I do not think that I know what would enter into the mind of the prospective purchaser other than those factors which I have mentioned. There probably would be others.

Redirect Examination by Mr. Morgan.

I have studied the production history of each well and acquainted myself concerning the quality of gas which has been produced from each well, the rate at which each well would be capable of producing gas, and the rate at which it is producing gas at the present time. It is also true that a prospective purchaser of oil and gas properties frequently has engineering studies made of the potentialities of the leases under consideration. It is not always true, but engineering estimates of the recoverable amount of gas or oil are quite often made by prospective purchasers from the indications derived from the history of these wells and adjoining wells.

1010 *Questions by the Examiner.*

I have indicated the value of an acre, as I say, from my knowledge and my opinion of the minds of the seller and the buyer. There is no question but what several of the Class A-2 or A-3 or B-1 leases will probably develop to be as valuable as that Class A-1 acreage and that some A-1 acreage will not be as valuable as I have indicated. But the law of averages, I am quite certain, will prevail and the buyer of leases under this classification would feel secure that the law of averages would prevail.

In arriving at the $125 per acre basis for Class A-1 acreage I had to take into consideration several conditions there. I first took into consideration and allowed to it the density of drilling, 320 acres per well. In the east part of the territory 160 acres is used while in the west 640 acres is used, but I have never known of another field where as much as 640 acres per well was used. Therefore, I have allocated, and I think a buyer of leases would, 320 acres per well.

I also found from my investigation that the average field price for gas, a fair average field price, would be 4 cents per thousand cubic feet on a 16.4 pound basis. That is recited in a number of leases which I have read and in division orders of this company and other companies which I have read. If a buyer should pay $125 an acre and drill a well thereon costing him approximately $20,000, which I find is a fair average in the field, at 4 cents a thousand, he would pay the one-eighth or one-half cent per thousand to the land owner, and I have allowed 1 cent per thousand for operations, which is very high. The lease would have to produce approximately 7,500,000 cubic feet per acre to amortize the purchase price and the cost of drilling the well and producing it. This field, to my knowledge, has a proven producing area. The dry hole factor has been eliminated and it does not, in my judgment, seem to be a large amount per acre to produce to amortize the investment, and the buyer of the lease would consider that he could amortize that investment at that price and yet make a fair and reasonable profit. That was my approach to the $125 value.

Redirect Examination Resumed by Mr. Morgan.

In arriving at my judgment of the price per acre to allocate to the choicest or A-1 classification, I have made a study of the withdrawals and the amount of gas produced from the acreage that was owned by the several companies who market gas through pipelines. I went to the office of the Railroad Commission and from their books I took the total amount of withdrawals from all the wells of Texoma Natural Gas Company. That information I also had from the companies' records and the records of Canadian River Gas Company, Cities Service Gas Company, some of the properties of Hagy, Harrington & Marsh, and the records of the Huber Corporation, the Northern Natural Gas Com-

pany, the Panhandle Eastern Pipe Line Company, the Shamrock Oil & Gas Company, and the Red River Gas Company. I took those wells of the companies that were connected to pipelines under purchase contracts and took the total withdrawals of gas that had been produced up to November, 1938, which was the date I ascertained this. Not knowing the operating expenses of the many companies here, I used for my problem the allocation of 320 acres per well as the drilling density, and at 4 cents a thousand, which I had satisfied myself was the average field price, I figured out the amount of gas in dollars per acre that had been produced, the gross amount for each company. The overall or weighted average, considering the total number of wells of all of these companies, the total withdrawals, 320 acres per well, gave me an amount of
1011 $334.42 per acre that had been produced from these wells connected to gas pipelines. That gave me some indication of what the capability of earnings of this property was, and with my general knowledge of the field from a good many years of watching it, discussing it with engineers, operators, and heads of companies, in my judgment I am satisfied that there is still over 50 per cent of the reserves yet to be produced.

In addition to that, I knew of some transactions in the early history of the field in southwestern Hutchinson County of some acreage that was sold for more than $125 an acre, at a time when we did not know the producing history of the field. Taking all these things into consideration I placed a price of $125 an acre on my very choicest locations. From that point on, in classifying the acreage as to the many factors that I have explained, to that acreage which falls in Class A-1 I allocated $125 an acre. In other words, I tried to take an overall picture of the whole field for my judgment and not one particular tract at a time.

Questions by the Examiner.

I know that the $334 and some cents is the gross figure. I did not know the operating expenses of the different companies, the large organizations, and things of that kind. It would no doubt cost different prices per acre, but from my experience as an operator I felt that $125 was an acceptable value there. It has already produced a gross of $334 an acre as an average over all the wells connected to the pipeline, and I felt that $125 per acre was a safe value,

a good, reasonable price, knowing in my judgment, and from my investigation, that there is well over 50 per cent of the production yet to be recovered. That is customary, I might say, in purchasing acreage. A company will pick out a certain area that they wish to go into. They will allocate a price, $50 an acre for this area, $25 for another, $15 for another. They do not pick out certain tracts within that area. It is a figure which they figure the law of averages will maintain in there. It is very customary among buyers of leases, in my judgment, to do that.

Redirect Examination Resumed by Mr. Morgan.

The weighted average of all these companies' wells connected to gas pipelines of which I could find the record in the Railroad Commission office, using 320 acres to the well and 4 cents a thousand as a field price, showed they had actually produced a gross of $334.42 per acre, on an average. I took as my judgment figure of what a purchaser would consider the choicest of the acreage to be worth, very substantially less than half of what the average production had been, based on that kind of a unit. A purchaser of acreage would unquestionably want to know what has been the average over the entire field, instead of the particular acreage he is considering buying.

Recross Examination by Mr. Slaff.

If I understand your question correctly as to anticipated production, I am quite certain that this field is recognized as a proven field. The dry hole hazard is eliminated and would be from the mind of the buyer of leases. I do not believe I have in mind specific ratios showing the relativity between price or value and production or anticipated production as expressed in dollars. I may be low on that price. I do not know. But I do feel, from my judgment and experience, that I have set a price as to which a buyer would consider that there is over 50 per cent yet to produce and he could pay charges and still realize a nice profit. There is no significance in the way Judge Morgan's question was phrased, that the price I set on this choicest acreage was half or less than half of the production in dollars today; I did not take a ratio of the weighted average at all on that.

1012 K. V. ZWIENER, a witness for defendants, testified:

Direct Examination by Mr. Hedrick.

(September 7, 1939.)

My name is K. V. Zwiener. I live at Evanston, Illinois. I was graduated from the University of California at Berkeley in the School of Commerce, majoring in economics. I am assistant cashier of the Harris Trust & Savings Bank, Chicago. This bank has total resources of approximately $285,000,000. I have been with that institution a little over ten years. Early in 1929 I went to the bank in the investment department. Prior to the enactment of the Banking Act in 1933 we maintained a bond department with representatives throughout the country, and I went into that division and represented the bank on the Pacific Coast. Subsequently the department was disbanded because the distribution of corporate securities was no longer permitted under the Banking Act; so I transferred back to Chicago and continued working with the securities division in connection with the purchase of bonds for our own portfolio and in connection with the servicing of accounts that we handled for individuals and corporations. I also made special surveys of investments for use in the handling of trust funds. Of course, we do not actually handle corporation securities any more except on order, but I am practically in daily contact with the markets for all types of bonds. My present work is primarily in one of the loaning divisions working on term credits. That, of course, means that we have to be watching the comparable return that the companies would get in the open market, and we are watching them constantly. I also consult with and work with the bank investment committee which does the purchasing of bonds for our own portfolio.

Our bank has a trust department which handles funds of various clients in a fiduciary capacity.

Of course, we all recognize that there is no security which is absolutely "risk-free." To me, and I think generally, the term "risk-free securities" has meant securities on which we feel sure we will have our principal paid at maturity and the interest will be paid as it become due and payable. To state it differently, they are securities which are closest to being absolutely risk-free that are available.

I believe the United States Government securities, that is, United States Treasury notes and bonds, direct obligations of the United States, are considered to be as close to being risk-free investments as we have available in the market today. I think you can so classify the high grade municipal obligations, that is the direct obligations of states, counties, cities, and other municipal divisions that have a high credit rating. By those having a high credit rating I mean those in which the relationship of debt to assessed valuation is relatively small and that have the support of unlimited taxation. I think such securities are pretty generally
1013 classified as risk-free investments. Bonds of this type are those of the State of Illinois, the State of Missouri, and the State of New York. I do not think you would classify many of our large cities in that group, at least none of them that I know of offhand.

If our bank as trustee were requested by a client or customer to invest a sum of money, say $3,000,000 or $4,000,000, in risk-free securities or the best type of securities available, with the greatest degree of certainty of a return of the principal at its stated maturity, and the payment of interest as it accrues, I think under such instructions I would be limited almost entirely to United States Government or municipal bonds. I do not think there are enough other securities which would meet the qualifications, that is, if there is any limitation on the maturity factors. For the most part, corporate bonds are very long maturities these days, and the yield obtainable does not compare favorably with United States Government or municipal bonds.

Under present conditions it has not been possible to accumulate any sizable block of high grade municipal bonds of relatively short maturities at any one time. It has usually taken a period of time to accumulate these securities. Governments you can obtain on practically any one day and buy a sizable amount. That is, there is always a very substantial amount of trading on Governments between dealers on the New York Stock Exchange daily.

(Company Counsel states purpose of testimony to show what rate of return or what yield an investor would have on investments under the sinking fund theory of amortization.)

The maturity date of a Government bond, of course, is the fixed date on which the principal becomes due and payable. All of the Treasury notes are issued with fixed maturities at a specified date: March 15, June 15, December 15, 1939 or 1940, whichever year you use. In the bonds you have not

only your fixed maturity, but the Government has reserved the option to prepay these securities on a specified date. Such date is designated the optional call date. The optional call date would be the date on which the bond can be called for payment at par and accrued interest. The fixed maturity date is the date that the Government actually has the obligation to make the payment of the principal in full.

In the handling of a fund for a corporation of this character, such as Natural Gas Pipeline Company of America, since the fund has to be liquidated on a specified date, we would not buy bonds which have a fixed maturity extending beyond the date on which the fund would have to be liquidated even though the optional date came before the date of liquidation. Under the instructions you have outlined the fund must be returned or liquidated on a specified date. Operating as a trustee, or in a fiduciary capacity, we would not feel that we were at liberty to invest in bonds that matured beyond the specified date indicated, and we would therefore limit the maturity, that is the actual maturity date, within the liquidation date of the fund. It is readily apparent that we would be taking a risk of market fluctuations in any securities if we had a maturity later than that specified liquidation date. In other words, if the fund which the bank had accumulated as a trustee had to be liquidated on December 31, 1954, we would buy securities having a maturity date prior to that time.

1014 I have made a study of the yields of bonds that would meet the specifications I have stated, which would include only United States Government bonds and certain high grade municipal bonds. I was asked by the management of these companies to make such a study. This request came on August 15, 1939, and I made the study immediately after that time. I used the closing market prices as of the date last mentioned in that study.

If we assume that we have a fund of, say $4,000,000, which would have to be invested on the first of January, 1940, and a similar fund to be invested annually thereafter, and all of these funds had to be liquidated and returned to the company by the end of 1954; and if we take into account the market prices as of the date stated, August 15, 1939, for such securities as would be available for that purpose under the statement I have made, the yield to the investor, according to my calculation on Government bonds existing as of August 15, 1939, would be approximately 1.52%. That would mean that the first year we would invest $3,000,000

or $4,000,000 in a 15-year maturity. Using the prices prevailing on that date as a guide, I have taken the corresponding yields as though we were investing the fund for the whole 15-year period as of that date. Answering your question whether 1.52% would be the net yield that the investor would secure, there would be a trustee's fee, of course, for certain expenses involved in the handling of an account of that type, and there would be a charge for handling. Using the usual schedule of fees on a sizable fund, around .17% should cover these charges. That is the yield on the bonds using the call date and maturity, depending upon the coupon rate as a guide of what you might obtain for each one of these individual years.

I have given a little consideration to the fact that there are no Government bonds actually available today that meet the exact date of December 31, 1954, for example. There is not a bond that comes due exactly on that date, so I have added in a little higher yield in some instances because we do not know from this point on what type of government securities will be outstanding. The markets as of August 15, 1939, serve only as a guide.

(At this point counsel handed the reporter for identification a document entitled "Quotations and Yields of United States of America Treasury Notes and Bonds at Close of Market on August 15, 1939." At the direction of the Examiner, such document was marked Exhibit 132 for identification.)

I have a copy of Exhibit 132 for identification in my hands. I prepared that exhibit and will explain what it is and what it contains. The first column is the coupon rate of the various securities listed. The next column gives the maturity date of these securities. The next column gives the optional call date of these securities on which the Government has reserved the right to prepay. Under the column "Optional Call Date" there is no date indicated for "United States Treasury Notes." The reason for that is that the Government has not issued these notes with the optional feature. They are a short term security bearing a very low coupon rate. There is little or no chance of refinancing those because of the shortness of the maturity.

The next two columns of "Quotations" give the bid 1015 and offered prices as of the closing date indicated.

The next two columns show the yield in per cent. The first one would be with respect to the call date, if the issues were callable, and the next column gives the yield to ma-

turity based on the fixed maturity of the notes and bonds. The last column indicates the amount of the issue outstanding in the hands of the public. It is noted that there are very substantial amounts of each maturity outstanding, which gives an idea of the opportunity we would have for purchasing those on any one date.

For example, take the issue of 3¼ bonds due October 15, 1945. This is the fifth item from the top under "United States Treasury Bonds." There is one billion four hundred million dollars of those outstanding in the hands of the public. At the top of the column on the extreme right-hand side there is no amount outstanding for the reason that the bonds there listed were due on September 15, 1939, and payment of those has already been provided for.

Questions by the Examiner.

Take the second item there, 1⅛ due December 15, 1939. They are quoted at 101-10/32 to 101-12/32, which is a negative yield. You do not get any yield on those bonds. If they were selling at par, 100.450, there would be just a zero yield to the maturity date. That comes about in most of the short term securities for a sort of a right value attached to them, because the Government has offered exchanges and the holders of these notes expect to get a new note that will immediately go to a premium that will offset the premium on these. On this particular day the first four maturities on the notes were actually on the negative yield basis. We had to go down to March 15, 1941, before we got to a zero basis and to June of 1941 before we could get a positive yield of any kind.

Direct Examination Resumed by Mr. Hedrick.

(At this point counsel handed the reporter a document entitled "Average Yield Obtainable from Investments in United States Government Notes and Bonds." Such document at the direction of the Examiner was marked Exhibit 133 for identification.)

I have prepared Exhibit 133 for identification, which is a tabulation showing the average yield obtainable from investments in United States Government bonds and notes during the next 15 years, based on the prices of those bonds and notes as of August 15, 1939. I have a copy of that ex-

hibit before me. This is an attempt to show about what the yield would be on the fund if you invested a certain amount, say, for example, on January 1, 1940, calling that the first year, and the nearest maturity that you could possibly get would be the June, 1954 range, and so on down. The second year you would invest for 14 years, the third year you would invest for 13 years, and the indicated yields in the Government's' outstanding today were used as a guide for obtaining an average yield. The description there is the coupon rate in per cent.

The coupon rate in per cent and maturity date and optional call date, the asked price, the yield in per cent of those particular bonds are shown in connection with the bonds outstanding and listed in Exhibit 132 for Identification.

I selected the particular bonds listed on Exhibit 133 because they come about as close to the maturity as we would want in a fund where the liquidation date is specified
1016 to be December 31, 1954. I, of course, selected bonds with a maturity prior to that date, and these particular bonds here listed have maturities closest to the date December 31, 1954 of any bonds obtainable.

The third column shows the maturity date of the notes of bonds, and the fourth column shows the optional call date. It just happens that the bonds I selected for those years to use as a guide were not optional bonds. As a matter of fact, they give a better indication of yield over a period of time than optional bonds because we are not dealing with the unknown factor of whether the Government will take them away from the owner on the optional date. Of course, treasury notes, which are used from the eleventh year on are non-optional bonds, also, or non-optional notes. If the Government should take any of these bonds away from the owner at a call date prior to the maturity date, we would have the fund on our hands and would have to reinvest it. In that case we would have to invest in other Government bonds of a shorter maturity, with the result that the yield under the conditions that prevailed on August 15, 1939, would be decreased.

I am not attempting to predict what the interest rates or the yields on investments will be over the period of fifteen years. In the fifth column in Exhibit 133 appears the asked price. I used the asked price instead of the paid price because the asked price is the price which the investor has to pay for any security, and the yield is figured on that

price. Unless you are in the seller's market it is very seldom that you buy Governments on the bid side of the market. The only indication we have of what we can actually buy them for is the price asked. The second and third columns from the right-hand side under the heading "Yield — %" shows respectively the yield to the call date of the bond and the yield to the maturity date of the bond.

In a general market as it existed on August 15 the yield to maturity on that first issue is about 2.05%. That is about in line with my judgment of what a 15-year obligation of the Government with a low coupon would return at that time. I mean it did not appear likely that a 2¾ per cent bond would be refinanced, so we gave the weight to the maturity factor, although you are not sure even in that instance that you will get 2.05% because the possibility is that it may be called, in which event it would allow only 1.92%.

In the first group of bonds which would be purchased in the first year, of course, the maturity would run down almost to the date of liquidation, and we would have a yield on that particular sum of money invested almost to the liquidation date on the entire fund. The last column gives consideration to the fact that we do not have actual maturities to fit right on December 31, 1954, and if they were noncallable bonds of a fixed maturity right straight through the 15-year period, this, in my judgment, is about the yield that would be obtainable on this type of security.

This 1.52% yield is not just an arithmetical average. We have given consideration to the fact that the first year we have the fund invested for a 15-year period at 2.05%, and therefore you have got to give it a greater weight by 15. The yield of 1.95% on the bonds bought the following year would have to be weighted by 14, and so on. As a result the average yield is pulled up above the arithmetical
1017 average. Therefore, this 1.52% is the weighted average, giving consideration to the fact that the funds are invested in a higher yield of security for over a longer period of time than in the low yield securities. For example, if you had a $4,000,000 fund invested at the beginning of the fourteenth year, you would only receive a return of about .07%, and this schedule weights that in accordance with the 15-year schedule. The longer term bonds have a higher yield to maturity, and the short term bonds, such as those running for only one year, for instance, have a much less yield.

Questions by Examiner.

If, for instance, the fourteenth year began on August 15, 1939, I would have selected that issue on next to the last line for investment. The schedule is based on conditions as of 1939. The relation between Exhibits 132 and 133 is that Exhibit 132 gives all of the issues that are available for investment, that is, all the Governments that are outstanding, including both notes and Treasury bonds, and Exhibit 133 is a selection from those shown in Exhibit 132.

Direct Examination Resumed by Mr. Hedrick.

That is a selection I made of securities having a maturity closest to the date of December 31, 1954 or reflecting about the average yield for a specific period. For example, there in the ninth and tenth years I have used the December 15, 1945, maturity, the 2½ at 1945 in both cases giving the ninth year a yield of about .10 of one per cent better than the yield in the tenth year. That would be about the usual spread at that period.

No investment in the fifteenth year is shown. The reason for that is that there are no Treasury notes available today on which you can obtain a positive yield for a one-year period.

This .17 of one per cent opposite the line "Less Cost of Administration" is the bank trustee's charge, to which I referred, and the subtraction of that amount from 1.52% of course gives the net average yield to the investor.

The reason we could not go out on the stock exchange or over the counter and buy most any kind of a bond for an investment of this character is because we have more of a credit risk in most any type of corporate bond. When you go out in that field it is necessary to be very selective in obtaining the type of security that could be used in a trust fund account. Many issues of bonds outstanding have a high ratio of debt to property or earnings. It might be in an industry where your earnings fluctuate widely that circumstances would necessitate reorganization. Under such conditions we cannot be sure of the payment of the principal or interest as it accrues.

In other words, if this company wanted to invest funds so that it may have some kind of earning and at least get its principal back without fail, the only way to accomplish

that purpose would be to invest in these risk-free securities which you say are United States Government bonds and municipal bonds.

1018 *Direct Examination by Mr. Morgan.*

I used the term "$4,000,000 on the first of January" for the purpose of arriving at a basis for my testimony. My testimony would be the same if the amount to be invested varied from $4,000,000 by $1,000,000 more or $1,000,000 less, or if any other date in the year were involved instead of the first of January. I used that figure because we were talking about a substantial amount.

Cross-Examination by Mr. Booth.

I did not say that one of the duties of my position [illegible] to advise the bank as to how it shall invest its own money. The policy with regard to investments is not handled by any one man in the bank, It is handled by a bank investment committee. I am not a member of that bank investment committee, but I consult with them in the purchase of securities for the bank's portfolio.

(Colloquy between Counsel and Examiner with respect to question asked by Counsel for Illinois Commerce Commission.)

Questions by the Examiner.

I have never advised corporations on the question of what their policy should be with respect to their sinking fund, whether they should invest in certain types of securities or return the money to the plants.

Cross Examination Interposed by Mr. Slaff.

We are consulted with respect to investments the corporations should make of funds they have available. I have handled that myself directly in a great many instances. We advise them from time to time as to what in our judgment are sound and prudent investments for them to make in the light of circumstances surrounding their corporate existences and conditions at the time.

(Colloquy between Counsel and Examiner with respect to objections on admissibility of Exhibits 132 and 133.)

Cross-Examination Resumed by Mr. Booth.

My testimony is that under the instructions stated to me as a predicate it is desirable for these companies to invest their depreciation or amortization moneys in Government securities. I did not express the opinion in my testimony that was desirable for this company to invest this money in Government securities as shown on Exhibit 132. I was only showing what the yield would be on risk-free investments if the funds were used in such investments. I have not attempted to in any way say what they should do or how they should handle it. If they were trying to accomplish the investments on a risk-free basis, it would be reasonable and proper to use this type of security. I am not making any suggestion or expressing any opinion that it is desirable for this company to put its amortization moneys in risk-free securities. I have made no investigation of the company's financial structure. I know they have bonds outstanding, but I do not know the amount. I happen to know they are 6% bonds. That is all I know about them. I have not explored with the company at all the question as to whether or not it would be more desirable for the company, if it wanted to make a sound, prudent investment, to invest this money in the purchase of its own bonds. I have given no consideration to that subject. I have not consulted with the company respecting whether or not it is desirable for the company to invest its money in additions to the property; I have not considered that in any way.

1019 In the course of my work and experience with the bank I have advised corporations as to how to invest their money. I have specialized on that for about two years or more. I have studied the problem of utility financing, but it is very seldom in general practice that I have ever found utilities, particularly operating companies, investing funds themselves. I am familiar with the fact that utilities do invest earnings in properties, in normal properties and additions. Generally speaking, the utility industry is a very young industry and is growing. They have a good deal of financing to do, not only through normal issue of securities, but they have gone ahead and used a lot of their own money, more than their depreciation reserves, for building up property. Talking generally, it is not unusual for utilities to use their depreciation charges for the purpose of paying for current additions to property.

(EXHIBITS 132 and 133 were offered and received in evidence, over the objection of counsel for each of the two Commissions, to whom exceptions were allowed.)

Cross-Examination by Mr. Slaff.

You have asked me as the basis for a hypothetical question to assume that defendants had $4,000,000 annually as the result of their charges for amortization; that they had a bond issue outstanding amounting to approximately $40,000,000 par at 6% interest; that in addition to that the company also was faced with the fact that it had to spend approximately $1,500,000 a year for additions to its property; that the record showed that in the last three or four years the income of the company on its investment approximated 10 or 12% per year; and that it was also faced with a problem as to whether or not it should invest this $4,000,000 a year in Government securities of the type which I have described; and you asked me whether or not I would consider it a sound and prudent act for the management of that company to take this $4,000,000 a year and either retire part of its bonds or invest that $4,000,000 or a part of it to cover additions to its physical property. So far as the hypothetical case that you have set up before me is concerned, I do not see any reason why those factors should not be given consideration. I think I would have to have more detail as to the type of bond that it is. I mean, obviously a natural gas or pipeline bond does not qualify as a good trust fund investment. It is not that kind of security. I think it depends upon what we are trying to accomplish with the funds. If this fund is something that is to remain intact over the period of years where it must be sure that it is going to be returned, I would want to see that it is going into risk-free investments, and I am not going to put it into a pipeline or into bonds of that type of company.

If a fund is segregated for a specific purpose, that is one thing. If it is a question of managerial policy or business judgment as to what they should do with it, that is another. It depends upon what you are trying to accomplish. If I am charged with the responsibility of seeing that $4,000,000 a year is taken out and placed in a position where I am sure that it is going to be returned to me within a 15-year period, I am going to be absolutely certain—I am sure any trustee would be—that those funds are going to be put in such

securities that they would be assured of their principal and interest. It gets down to a question of business judgment as to which way you are going to handle it.

1020 *Cross-Examination by Mr. Booth.*

I am not in position, without knowing more about the particular bonds in question, to pass upon the question of judgment involved and whether or not the management of defendants should invest in Government securities at a return of only 1½% rather than paying off its outstanding bonds, which it will be compelled to retire sooner or later at 6% interest. The question of where you are going to apply the depreciation funds of any utility obviously is entirely one of judgment. In determining whether you will put the money back in the property you might think that is going to earn 6% or 10%, but you have no way of knowing. As to the retirement of the outstanding bonds it might not accomplish the purpose for which you are taking the amortization fund. As I understand it, the amortization fund that I was asked about would be one where you take accumulations of funds over a period of 15 years and return the principal and interest at the end of that 15-year period. It is to be used for the purpose of returning to the investors the money they put in the enterprise.

(Objection by Company Counsel to question by Commission Counsel sustained.)

I am familiar with the fact that utility companies are entitled under the law, normally, to obtain a fair return over and above their operating expenses. I am also familiar with the normal charges to operating expenses that are made by utility companies. One of those normal charges made by utilities is the charge for depreciation. Some utilities base their depreciation on the straight-line and others use the sinking-fund method and I am familiar with those facts. As to whether it makes a difference to the consumer in the rates that he would be required to pay, where a company uses the sinking-fund method in investing its depreciation funds and invests depreciation funds in Government bonds bearing an average yield of 1.52% or in the retirement of the utility's own bonds which bear a coupon rate of 6%, I cannot say that I have seen that particular question enter into it from what I

have examined. (Objection by Company Counsel and questioning discontinued.) If these companies have available $4,000,000 a year and bonds bearing 6% interest, I would say that it would be a prudent act of management to invest and use that money to retire a part of those bonds when it can only obtain 1.5% by investing in Government securities. In other words, I would say that if the company can save interest through the investment of a part of their funds, that is the thing we are advising them to do all the time. I mean, the question of refinancing is obvious. There is a saving in there.

Redirect Examination by Mr. Morgan.

If the bondholder and stockholder are synonymous and the same person, as Mr. Booth suggested, and the money is used to retire the bonds, and the lesser amount is accumulated and turned over to the stockholder and he is required to surrender his bonds, he would be putting his money back into the risk after it comes back to him as a stockholder, and he must exercise his judgment to do that or put it into some risk-free security that will accumulate a sum sufficient to get him all of his money by the end of the 15-year period. So if the stockholder and the bondholder is the same man, it does not matter whether you retire the bonds or whether you handle it as a fund and return it through the liquidation of the corporation. He is going to have to put it to risk of some sort of investment, such as I have described here or he will not get his money back.

1021 J. G. DICKINSON, recalled by defendants, testified:

Direct Examination by Mr. Morgan.

(September 8, 1939.)

I have testified before in this case. In my original testimony, I stated that I am the superintendent of production of Texoma Natural Gas Company. I have under my supervision the lease and land departments, the geological department, the accounting department, so far as the Amarillo office is concerned, and the production department. In connection with my duties, I have the super-

vision and direction of the activities conducted by the several departments under the immediate supervision of the heads of those departments. I award the drilling contracts and execute those contracts for the company. In that connection, I have kept abreast of the contract prices or costs of drilling wells throughout that part of the field in which we have leases.

Since I was on the witness stand before, I have caused to be made under my direction an estimate of the recoverable reserve of gas down to an assumed abandonment pressure of 25 pounds, as of August 1, 1931, underlying the leases owned by Texoma as of January 1, 1939. I picked August 1, 1931 as the date of computing these reserves for the reason that it was the date those reserves were acquired by Texoma. That is it was the effective date of the transfers of the reserves to Texoma.

I used the same recovery factor that was used by the geologists Peterson, Hughes and Thompson, in connection with the reserves which they have brought into the record, which was 90 percent.

As of August 1, 1931, underlying the acreage owned by Texoma on January 1, 1939, computed on a pressure basis of 16.4 pounds per square inch, the estimated recoverable reserves underlying such acreage were as follows:

At zero pounds, abandonment pressure	2,505,680,723 M.C.F.
At 25 pounds	2,349,536,607 M.C.F.
At 50 pounds	2,187,387,385 M.C.F.
At 75 pounds	2,025,240,991 M.C.F.
At 100 pounds	1,869,096,876 M.C.F.
At 125 pounds	1,706,947,653 M.C.F.

I caused Mr. Peterson to reduce to writing an explanation of the methods employed by him in determining these reserves as of the date mentioned. I have this memoranda with me.

(At this point counsel handed the reporter a document dated "Aramillo, Texas, August 24, 1939", addressed to "J. G. Dickinson, Office", captioned "Explanation of Method Used in Determining Reserves As of August 1, 1931, On Acreage Owned by Texoma Natural Gas Company, January 1, 1939", and requested that it be marked as an exhibit for identification. At the direction of the Examiner, the document was marked Exhibit 134 for identification.)

I have recently made contracts for drilling wells for Texoma. We are currently drilling four wells in Moore County. We have drilled other wells during the year 1939. The prices stated by the witness Stoddart, a member of Mr. Hamilton's staff, who testified concerning the reproduction cost new of Texoma's wells, that $4 per foot
1022 in Moore County, $3.50 per foot in Hutchinson County, and $3.25 per foot in Carson and Gray Counties are the current contract prices paid in those areas. They were the contract prices on June 1, 1939 and for several years prior to that time. The differential in price between Gray and Carson Counties and Moore County is explained by the difference in depth of the wells. This difference in depth requires more time for the drilling contractor to withdraw and run his drill pipe when he changes bits. There is also a difference in the formation drilled. In the Moore County area the contractors more ofter lose circulation with its attendant difficulties and expenses. There is a difference in the amount of transportation involved in drilling wells in Moore County and in Gray and in Carson Counties, as a rule. Contractors operating in Moore County are further removed from drilling tool supplies than are contractors operating in Gray and Carson Counties. The price for drilling in Gray and Carson Counties is $3.25 a foot. The customary price in Hutchinson County is $3.50 a foot. Texoma has not drilled any wells recently in Hutchinson County. However, the price of $3.50 per foot is the customary price there. In Moore County the price is $4 per foot. This price per foot includes the drilling of the well from the top to the bottom.

In every case in the drilling of a gas well the actual drilling of the producing formation is done with cable tools. The upper part of the hole down to the top of the gas producing horizon is drilled with rotary tools. The rotary tools are then moved out and the standard form rig is moved in and cable tools are rigged up. The actual drilling of the gas producing formation is done with cable tools, for the reason that the well would be seriously damaged if the mud-laden fluid and water used in rotary drilling were allowed to enter the gas producing formation.

This $4 a foot, or whatever the price happens to be, depending, of course, on the location, covers the drilling by rotary and by cable tools. As a usual thing the drilling

of the part of the hole which is done by cable tools is more expensive for the contractor. This condition is brought about by the fact that as the drill goes down below a gas-producing or gas-pay streak, the gas does not lift the cuttings out of the hole. The contractor is not able to keep water down to mix the cuttings with, and it is a question of just sitting there and pounding the stuff into dust, almost, before he can go ahead.

The term "day work", referred to by Mr. Stoddart in connection with his testimony on Exhibit 125, is intended to cover contingencies that are not provided for in the contract and which usually cannot be anticipated. The contractor is obligated to finish the well to its total depth under the contract price per foot. Day work is provided for situations which may happen after the contract for drilling is completed. In other words, it may be necessary to retain the contractor on the well after he has drilled it down to its full depth.

For example, we may wish to conduct some cleaning out operations after the drilling is completed. Sometimes the hole will bridge. That means the sides of the well will cave in and jam off the drilled portion so that the flow of gas is either cut off or restricted. In that kind of a cave-in, we have the contractor run the tools back in the hole and drill it out. That day work is provided for in the contract itself, and the pay for this work is $90
1023 per 24-hour day. That is the prevailing contract price for that type of work in the field. That price does not vary in different portions of the field like the footage part of the contract. In some of Texoma's wells no day work is required. We are able to complete the well without any day work. In others, it may require five or six days or longer. Our experience has been that the average amount of day work amounts to about one day where the well is completed in a normal manner. (Motions to strike above testimony by Counsel for the two Commissions denied.) I do not have a record of the day work that was performed on the wells now belonging to Texoma but which were drilled prior to Texoma's purchase of these wells.

I have a copy of one of those drilling contracts currently in use in the field.

(At this point counsel handed the reporter a document captioned "Drilling Contract" bearing the date in the

first line, 16th of August, 1939, and requested that it be marked for identification. At the direction of the Examiner the document was marked Exhibit 135 for identification.)

Exhibit 135 is a copy of the contract which we executed with the drilling contractor for the drilling of a well on one of Texoma's leases. That contract was executed on the 16th of August, 1939 and is at present being performed.

1024 S. LEROY MILLER, a witness for defendants, testified:

Direct Examination by Mr. Hedrick.

(September 8, 1939)

I am the same S. Leroy Miller who was on the witness stand day before yesterday. I live at Niles Center, Illinois. My place of business is at Twenty North Wacker Drive, Chicago, Illinois. I am in charge of the accounting departments of Natural Gas Pipeline Company of America and Texoma Natural Gas Company. I received my academic training in accounting at Northwestern University. From January, 1925, to October 30, 1930, I worked for the Empire Companies, with headquarters at Bartlesville, Oklahoma. My work with that company covered various branches of accounting.

Since November 1, 1930, I have worked for the Natural Gas Pipeline Company of America and Texoma Natural Gas Company in the supervision of various branches of accounting. From November 1, 1930, to June 1, 1931, I supervised the accounting work in connection with construction cost records of the two companies. From June 1, 1931, to May, 1937, I supervised the accounting records of the Texoma Natural Gas Company and handled such other work as the tax returns and special reports for both companies. Since May, 1937, my work has covered the supervision of the accounting records of both companies. I work under the direct supervision of Mr. S. E. Campbell, Secretary of the two companies.

(At this point counsel handed to the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company—Earnings State-

ments for Calendar Years 1932 to 1938, Inclusive," and requested that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit 136 for identification.)

I have prepared for the purpose of this case Exhibit 136 showing the earnings statements of defendants for the calendar years 1932 to 1938, inclusive. This exhibit is a statement of the earnings and expenses of the two companies separately and of the companies combined, after eliminating inter-company income and expense. This exhibit was prepared to show in general the information purported to be shown in Exhibit No. 15 introduced through Mr. Woodford, an accountant for the Illinois Commerce Commission. This exhibit is arranged in slightly different order from Exhibit 15 so as to present what, in my opinion, is a more logical sequence of statements. Also, certain expenses have been reclassified so as to make the statements, in my opinion, more uniform. The exhibit is divided into three parts.

Pages 1 to 3, inclusive, reflect the combined revenues and expenses of the two companies after eliminating inter-company transactions. Pages 4 to 9, inclusive, reflect the revenue and expenses of Natural Gas Pipeline Company of America. Pages 10 to 15, inclusive, reflect the revenue and expenses of Texoma Natural Gas Company. These statements were prepared to show the revenue and expenses as reflected by the books of the companies and were not taken from the companies financial statements, as were several pages of Exhibit No. 15. The financial state-
1025 ments do not present final information, since they were prepared as of a certain day or for a certain period. Although in accord with the companies' books at the date they were prepared, the financial statements do not reflect subsequent adjustments that affected the period. The statements in this Exhibit No. 136 were prepared for the period starting January 1, 1932, since the companies considered that date as the beginning of permanent operations. All prior operations were considered preliminary and the resulting deficit of $7,996,92 was capitalized, on the companies' books. Page No. 1 presents in condensed form a statement of profits and losses of the two companies combined, after eliminating the inter-company transactions, by years and for the total period. This statement shows a total net profit for the period of $8,244,435.

79 as compared with $8,207,995.08 shown on page 16, line 38, Column 1, of Exhibit No. 15. This difference between the two statements, amounting to $36,440.71, is accounted for by five items.

1. Loss for 2½ months of 1931 included in Exhibit No. 15, $7,996.92. This amount is the net loss for the 2½ months from October 15, 1931, to December 31, 1931, which, as I have mentioned before, was considered a period of preliminary operations and this loss was capitalized on the books of Natural Gas Pipeline Company of America.

2. Write-off of corporate expenses included as 1931 expense in Exhibit No. 15, $5,979.02. This amount reflects the total expense in organizing Natural Gas Pipeline Company of America and was charged off on the books of the company in the year 1935.

Questions by the Examiner.

The first figure I am comparing is shown on line 13, page 1, of Exhibit No. 136 and the figure $8,207,995.08 is shown on page 16, line 38, column 1, of Exhibit No. 15.

Direct Examination Resumed by Mr. Hedrick.

The amount $7,996.92, to which I have referred, appears in Exhibit No. 15, on page 7, line 24, column 1 and is designated A. The next item, I believe, we just identified, was on page 16. That is shown in line 31, column A, of Exhibit No. 15. When I refer to Exhibit 15 I am referring to it as corrected by an errata sheet, Exhibit 53.

This amount of $5,979.02 reflects the total expense in organizing the Natural Gas Pipeline Company of America and was charged off on the books of the company in the year 1935. This amount is not applicable to any definite year, and I have therefore considered it as an unallocated charge to surplus. In other words, I have not considered this as an expense of any particular year.

3. Write-off of bond expense applicable to 1931, included in Exhibit No. 15 as expenses of the years 1936 and 1937, $28,210.35. There are quite a number of items in this Exhibit No. 15 which have been combined, and it is rather difficult to identify some of these. This adjustment of bond expense is reflected in two items in Exhibit No. 15. On page 6, line 15, column G is an amount of $19,916.67. That

is the adjustment on the books of the Natural Gas Pipeline Company of America. That is an item of amortization of bond discount and expense. That item is a writeoff,
1026 an adjustment of the bond expenses for Natural Gas Pipeline Company of America. It is shown on page 6 of Exhibit No. 15 on the line with organization expense write-off, but it is in fact an adjustment of the bond expense and had nothing to do with the organization expense. As I recall from my analysis of Exhibit 15, the other part of that adjustment was combined with other figures shown on page 14 of Exhibit No. 15. I am unable to identify that balance from this particular statement, but the amount was included in the year 1936. I would have to analyze each of those figures to state in just which one of those items it is included. I will be prepared to do that on cross examination as requested. I will prepare a breakdown of each one of these amounts to which we have been referring and to which we will refer so that they can be definitely located in Exhibit No. 15, by line and by page number.

This amount $28,210.35 reflects the unamortized portion of the cost of tax stamps affixed to the original bond issued, and was charged to surplus in 1937 as being applicable to 1931 in accordance with the agreement between the Natural Gas Pipeline Company of America and the Bureau of Internal Revenue. From the total of the three items I have just enumerated there should be deducted the total of the following two items in accordance with the books of the company. These charges were made to put the books more in line with the settlement with the Bureau of Internal Revenue concerning tax liability.

4. Surplus adjustment of 1938 taxes not included in Exhibit No. 15, $2,966.30. This amount is an adjustment of the accrual for 1938 income taxes of the Natural Gas Pipeline Company of America. This adjustment was recorded on the books of that company in the first part of 1939 but was not reflected in Exhibit No. 15.

5. Surplus adjustment of 1938 depreciation not included in Exhibit No. 15, $2,779.28. This adjustment of depreciation was made on the books of the Natural Gas Pipeline Company of America in the first part of 1939 and is an adjustment affecting the depreciation as recorded on the books of that company during the year 1938.

The next total of these five adjustments, amounting to

$36,440.71, is the difference between page 1 of this Exhibit 136 and the total shown in line 38, column 1, page 16, of Exhibit No. 15.

Page No. 2 supplements page No. 1 and reflects in some detail the information shown in lines 1 and 2 of page No. 1. This statement reflects the operating revenue and operating expenses for the two companies after eliminating inter-company income and expenses.

These last five items just summarize the differences.

Page No. 3 shows the combined surplus account for the Natural Gas Pipeline Company of America and the Texoma Natural Gas Company after eliminating inter-company transactions. Line 1 shows the combined profits and losses for the year and the period. Line 2 shows dividends declared and paid. Line 3 shows the yearly balance of net profits after payment of dividends. Lines 4 to 7, inclusive show the details of other surplus charges, and line 9 shows the combined deficit at the end of each year. The dif-
1027 ference between the deficits of $939,753.58 shown on page No. 3, line No. 9, column 8, of this Exhibit No. 136, and the corresponding item amounting to $942,004.92 shown on page 16, line 40, column 1 of the Exhibit No. 15 is accounted for in two items:

1. Loss for 2½ months of 1931 included in Exhibit No. 15 but capitalized on the companies' records $7,996.92. This is the loss for the 2½ months of preliminary operations that was capitalized on the books of the Natural Gas Pipeline Company of America and is the same item that I have referred to previously.

2. Less surplus adjustment of taxes and depreciation for the year 1938 not included in Exhibit No. 15, $5,745.58. This amount is the total of the two 1938 surplus adjustments referred to in the explanation of page No. 1, namely, the adjustment of income taxes for the Natural Gas Pipeline Company of America, $2,966.30, and adjustment of depreciation of Natural Gas Pipeline Company of America, $2,779.28. The net difference between the amount of the loss for the 2½ months of 1931 as reflected by the books of the Natural Gas Pipeline Company of America, amounting to $7,996.92, and the adjustment of taxes and depreciation as reflected on the books of the Natural Gas Pipeline Company of America, amounting to $5,745.58 is a net difference of $2,251.34, which, as I have stated, is the difference between the amount shown on this page 3, line

9 column 8, and the comparable item shown on page 16, line 40, line 1, of Exhibit No. 15.

Page 4 presents in condensed form the profits and losses of the Natural Gas Pipeline Company of America, as reflected by the books of that company. This statement reflects a total profit for the seven years of $10,097,235.29 instead of the $13,813,992.34 shown on page 1, line 22, column 1, of Exhibit No. 15. The difference between these two exhibits, amounting to $3,716,757.05, is accounted for as follows:

I mean the difference between page 4 of Exhibit No. 136, that is, line 12, column 8 of that page and page 1, line 22, column 1, of Exhibit No. 15.

1. Depreciation omitted from page 1 of Exhibit No. 15, $2,669,744.05. During the first two years of the companies' operations the depreciation was not recorded on the books of the Natural Gas Pipeline Company of America. This depreciation was, however, recorded during the year 1934 but was not reflected on the financial statements, which had been previously prepared and which were the source of the information from which page 1 of Exhibit No. 15 was prepared.

Wherever I testified as to the source of Mr. Woodford's information, I based my statement on the source stated in his Exhibit 15 or his testimony concerning that exhibit.

Also for the year 1937 an adjustment of $400,000 was made in the depreciation and this amount, although reflected on page 6, line 22, column G, was not reflected on page 1 of Exhibit No. 15. In other words, Mr. Woodford has a page in his exhibit, showing the over-all adjustment,
but he did not carry those adjustments to a particular
1028 page for the particular years. I could take Mr. Woodford's exhibit and by taking page 1 of Exhibit 15, together with page 6, line 22, column G, I would arrive at the final figure, but he did not do that in the preparation of page 1.

2. Bond discount and expense amortization omitted from page 1 of Exhibit No. 15, $258,410.18. During the year 1933 the amortization of bond discount and expense applicable to the year 1932 was recorded on the books of the Natural Gas Pipeline Company of America but was not reflected in the 1932 financial statements, which has been previously prepared and which were the source of the information used in preparing page 1 of Exhibit No. 15.

3. Interest adjustment for 1931 omitted from page 1 of Exhibit 15, $752,163.16. This is the amount of interest expense of Natural Gas Pipeline Company of America applicable to the period from October 15th to December 31, 1931. This interest adjustment is reflected on page 6, line 39, column A, of Exhibit No. 15, but was omitted in the preparation of page 1 of Exhibit 15.

4. Total of miscellaneous adjustments omitted from page 1 of Exhibit No. 15, $36,439.66. This adjustment is made up of a number of small items which I have not attempted to enumerate. I will list those small adjustments in the sheet which I am going to prepare later.

Total of adjustments omitted from page 1 of Exhibit No. 15, $3,716,757.05. These adjustments are shown on pages 6 and 7 of Exhibit No. 15 but should be carried throughout that Exhibit so as to give complete information.

Page No. 5 of this Exhibit No. 136 is divided into three parts: Operating revenue, operating expense, and gas account of the Natural Gas Pipeline Company of America. This statement shows the various accounts as reflected by the books, or, in other words, this statement shows page No. 2 of Exhibit No. 15 after applying the adjustments shown on page 6 of Exhibit No. 15, together with an adjustment of the 1938 taxes not included in Exhibit No. 15, amounting to $2,966.30. This adjustment of taxes has been previously discussed in connection with this Exhibit No. 136. Although there is some slight difference in application of the adjustments as reflected on the books of the Natural Gas Pipeline Company of America between this page No. 5 of Exhibit No. 136 and the adjustments shown on page 6 of Exhibit No. 15, these differences are between the years and the over-all difference is only the adjustment of 1938 taxes that I have just explained.

Page 6 shows the gas sales of the Natural Gas Pipeline Company of America both as to thousands of cubic feet and revenue and is comparable to page 3 of Exhibit No. 15. For the period of years shown the two exhibits agree in totals except that page 3 of Exhibit No. 15 does not reflect the adjustment of gas sales, which adjustment is shown on page 2, line 8, column C, of Exhibit 15. As to gas sales in thousands of cubic feet, the difference in quantities is caused by the fact that page No. 3 of Exhibit No. 15 reflects metered volumes and this page 6 reflects the billed volumes. In other words, this page 6 shows the total gas metered plus adjustments for the excess B.t.u.'s, or heat units of

the gas delivered over and above the contract base. In other words, there is an adjustment made in the metered volume of gas caused by excess British thermal units contained in the gas actually delivered. I have used the
1029 billed volumes and not the metered volumes. I believe I mentioned that for the period of years shown on this statement that the only differences were the ones that I had enumerated.

Page 7 shows a breakdown of other operating income and non-operating income. This page is comparable to page 4 of Exhibit No. 15 except that this page reflects adjustments shown on page 6 of Exhibit No. 15, and also includes, first, reclassification of interest on treasury bond and, second, reclassification of house rents in accordance with the company's present classification.

The interest on the treasury bond, which was a $1,000 bond held by the company was reflected originally on the books of the company both as an interest expense and as an interest revenue. That was one of the company's own bonds which was held in the treasury. These contra-interest items were eliminated in an adjustment on the books of the company so as to clearly reflect the interest income and the income expense of the Natural Gas Pipeline Company of America. At the time Exhibit No. 15 was prepared, the revenue from house rents was considered non-operating income; but this item was reclassified on the books of the company since the first of the year 1939 and this statement was prepared in accordance with the company's present classification. I find no fault with Mr. Woodford's exhibit in light of the records as they then stood.

Page 8 shows in detail the amounts of gas purchased and the amounts of gas used by the company. This page No. 8 is comparable to page No. 5 of Exhibit No. 15 except that this page No. 8 reflects the amounts paid for gas after applying all adjustments, and page No. 5 of Exhibit No. 15 does not include the adjustments of the amounts paid for gas as shown on page No. 6 of Exhibit No. 15.

Page 9 is a statement of the surplus account of the Natural Gas Pipeline Company of America and is comparable to page No. 7 of Exhibit No. 15. Although there are variations in the year by year totals between this page No. 9 and page No. 7 of Exhibit No. 15, caused by differences in the application of surplus adjustments, these differences wash out in total except for two items of $5,745.58 that

were not included in Exhibit No. 15. These two items are the adjustments for taxes and depreciation which I have previously explained.

Page 10 presents in condensed form a statement of profits and losses of the Texoma Natural Gas Company as reflected by the books of that company, and is comparable to page No. 8 of Exhibit No. 15. This statement shows a net loss for the seven years of $1,852,799.50 as compared with a profit of $1,393,518.59, shown on page No. 8, line 34, column 1, of Exhibit No. 15. The difference between the total shown on this page No. 10 and the total shown on page No. 8 of Exhibit No. 15 is accounted for as follows:

1. Depreciation and depletion for the years 1932 and 1933 omitted from page No. 8 of Exhibit No. 15, $895,970.58.

During the years 1932 and 1933, the depreciation and depletion was not recorded on the books of the com-
1030 pany. However, during the year 1934 these amounts were recorded as applicable to the years 1932 and 1933, and should, therefore, be reflected in Exhibit No. 15. These adjustments of depreciation and depletion are reflected on page No. 14 of Exhibit No. 15, but are not included on page No. 8 of Exhibit No. 15.

2. Retirements of property omitted from page No. 8 of Exhibit No. 15, $2,351,340.74. This amount is the write-off of acreage that expired or was abandoned during the year 1933, and the loss on the sale of certain wells and leases during the year 1933. This amount of $2,351,340.74 that was omitted in the preparation of page No. 8 of Exhibit No. 15 is reflected on page No. 14, line 15, column 1, of Exhibit No. 15. From the total of these two adjustments that I have just explained should be deducted the amount of $993.23, which is the sum total of miscellaneous adjustments that I have not detailed, the net total of adjustments omitted from page No. 8 of Exhibit No. 15 being $3,246,318.09.

Page 11 is divided into two parts: Operating revenue and operating expenses of the Texoma Natural Gas Company. The first section of this statement explains in brief line 1 of page 10 of Exhibit 136. The second section of this statement explains line 2 of page No. 10. The difference between the amounts shown in the statement and those amounts shown on pages 12 and 13 of Exhibit No. 15, are caused principally by the omission from pages 12 and 13 of Exhibit No. 15 of adjustments shown on page No. 14 of Exhibit No. 15. Also pages No. 12 and No. 13 of Exhibit No.

15 do not reflect the reclassification of certain write-offs of retirements of property that were originally charged to operating expenses but were later reclassified on the books of the company.

Page 12 shows the gas sales of the Texoma Natural Gas Company, both as to thousands of cubic feet and the revenue. This statement also shows sales in thousands of cubic feet and is comparable in that respect to page No. 10 of Exhibit No. 15. The amounts of gas shown on pages 9 and 10 of Exhibit No. 15 under the captions "drilling wells" and "testing lines" were reclassified on the books of the company so as to more clearly reflect the revenue producing items and the items of expense.

Page 13 shows the details of the gas account and the gasoline account for the years 1932 to 1938, inclusive, and the totals for the period. This statement is comparable to page 11 of Exhibit No. 15.

Page 14 shows a breakdown of other operating income and non-operating income. Similar information in different form is shown on page 9 of Exhibit No. 15. However, since Exhibit No. 15 was prepared there have been certain reclassifications of income on the books of Texoma Natural Gas Company. These reclassifications of income pertain to interest income and house rents. In the first years of operation of Texoma Natural Gas Company the company did separate its interest income from its interest expense. However, during the later years it had been the policy of that company to combine interest income with interest expense and reflect the interest expense as a net amount. That interest has now been separated on the books of the company and is so reflected in this page 14 of Exhibit No. 136. As to house rents, as I have explained in connection with Natural Gas Pipeline Company of America, the house rents were classified as non-operating income on the books of Texoma Natural Gas Company at the time Exhibit
1031 No. 15 was prepared. However, in the first part of 1939 this account was reclassified to other operating income on the books of Texoma Natural Gas Company, and this page 14 was prepared in accordance with the company's present classification.

Page 15 is a statement of the surplus account of Texoma Natural Gas Company and is comparable to page 15 of Exhibit No. 15. While there are variations in the year by year totals between this page 15 of Exhibit No. 136 and page 15 of Exhibit No. 15, these differences wash out in

the final total, both statements showing a loss for the seven years of $1,852,799.50 instead of a profit of $1,393,518.59 shown on page 8, line 34, column 1 of Exhibit No. 15.

Exhibit No. 136 was prepared from the books of the companies.

(At this point EXHIBIT 136 was offered and admitted in evidence without objection.

At this point counsel handed to the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Balance Sheets and Statements of Plant and Equipment, December 31, 1931, to December 31, 1938, Inclusive", and requested that it is be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 137 for identification.)

I prepared Exhibit No. 137 and have a copy of it before me. This exhibit shows the year end balance sheets and statements of plant and equipment of the Natural Gas Pipeline Company of America, the Texoma Natural Gas Company, and for the companies combined after eliminating inter-company balances. This Exhibit No. 137 covers the same type of information shown in Exhibit No. 54 except that it reflects all end of year balances from December 31, 1931 to December 31, 1938, whereas Exhibit No. 54 does not show the balances prior to December 31, 1934, as Exhibit 54 omitted balances prior to December 31, 1934.

Page No. 1 shows the year end balance sheets for the companies combined after eliminating inter-company balances. This page 1 is comparable to page 5 of Exhibit No. 54.

Page 2 shows the year end balances of the plant and equipment accounts of the two companies combined and is a breakdown of line 3 of page 1.

Page No. 3 of this Exhibit No. 137 shows the year end balance sheets of the Natural Gas Pipeline Company of America as reflected by the books of the company and is comparable to page No. 1 of Exhibit No. 54. I have examined the balance sheets presented on page 1 of Exhibit No. 54 and have found that most of the items shown are correct. However, for the year 1934 Mr. Woodford's figures contain certain adjustments, which I was unable to identify, and which produced slightly different results than those I obtained. None of the balance sheets in Exhibit No. 54 reflect the adjustments disclosed on pages 6 and 7 of Exhibit No. 15, nor do they agree with the year end sur-

plus account shown on page 7, line 27, of Exhibit No. 15. The balance sheets in Exhibit No. 54 for the years ended December 31, 1935, 1936, 1937 and 1938 were taken from the company's financial statements and do not reflect any subsequent adjustments.

1032 Page 4 shows the year end balances of the plant and equipment accounts of the Natural Gas Pipeline Company of America and is a breakdown of line 2, page 3. This statement is comparable to page 2 of Exhibit No. 54. In this statement of plant and equipment in Exhibit No. 137 the balances shown as of December 31, 1931 were obtained by analyzing job orders that were open at that date.

Page No. 5 shows the year end balance sheets for the Texoma Natural Company as reflected by the books of the company, and is comparable to page 3 of Exhibit No. 54. All balance sheets shown on page 3 of Exhibit No. 54 were taken from the company's financial statements and do not reflect subsequent adjustments. Nor do these balance sheets tie in with the surplus statement shown on page 15 of Exhibit No. 15.

Page 6 shows the year end balances of the plant and equipment accounts of the Texoma Natural Gas Company and is a break-down of line 3, page 5. This page is comparable to page 4 of Exhibit No. 54. In this statement of plant and equipment in Exhibit No. 137 the balances shown as of December 31, 1931, were obtained by analyzing job orders that were open at that date.

The information used in preparing these statements in Exhibit No. 137 was taken from the books of the Natural Gas Pipeline Company and the Texoma Natural Gas Company.

(EXHIBIT NO. 137 was offered and admitted in evidence without objection.

At this point counsel handed to the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Statement of Operating Revenue and Expenses, Statement of Plant and Equipment Exclusive of Leaseholds, Statement of Accumulated Expenditures for Leaseholds, December 31, 1931, to December 31, 1938, Inclusive", and requested that it be marked for identification. At the direction of the Examiner, such document was marked Exhibit No. 138 for identification.)

I prepared Exhibit No. 138 and have a copy of it before me.

This Exhibit No. 138 was prepared to show by years and for the total period of years three classes of information: (1) Operating Revenue and Operating Expenses; (2) Year Ended Balances of the Plant and Equipment Accounts, Exclusive of Leaseholds; and (3) the Accumulated Expenditures for Leaseholds. This information is presented in three groups: Pages 1 and 2 cover the information for the companies combined; pages 3 and 4 cover the information for the Natural Gas Pipeline Company of America and pages 5 to 8, inclusive, cover the information for the Texoma Natural Gas Company.

Page 1 shows in some detail the operating revenue of the two companies after elminating inter-company items. Page 1 also shows the operating expenses of the two companies after eliminating inter-company items, and these expenses are divided into two groups: (1) Operation and General Expenses and (2) Maintenance Expense. The item of
1033 net earnings from operations before amortization and other charges is, of course, the excess of the gross operating revenue over the total operation, maintenance, cost of retirements, and general expenses. This item of net earnings from operations before amortization and other charges is shown by years from 1932 to 1938, inclusive, and the total accumulated for the seven years. Line 35 of this page 1 shows for the two companies the accumulated net earnings from operations before amortization and other charges from the beginning of the year 1932 to the end of each of the successive years shown on this page. Line 36 shows the annual average of net earnings from operations before amortization and other charges and reflects the average net earnings from operations before amortization and other charges to the end of each period of years starting with the year 1932. In other words, this annual average might be explained as the result of dividing the total net earnings from operations before amortization and other charges for the period of years (line 35) by the number of years' operation since January 1, 1932. In other words, take column 5 "Year 1936" the figure on line 36 is obtained by dividing the figure on line 35 by 5. The same is true in the other columns in the exhibit.

Cross-Examination Interposed by Mr. Slaff.

By the term "total cost of retirements", page 2, line 30, I mean the expense of labor and materials used in retiring items of property. That is to say gross amounts of labor

and expense involved in the retirement of property. Page 2 shows the balances of the plant and equipment accounts for the two companies combined, exclusive of leaseholds at the end of each year.

Direct Examination by Mr. Hedrick Resumed.

There is a typographical error in the caption. The word appearing "Pland" should be "Plant".

This statement also shows the expenditures of leaseholds to the end of each year.

Page 3 shows the operating revenue, operating expenses, and net earnings from operations before amortization and other charges of the Natural Gas Pipeline Company of America. This statement also shows the total net earnings from operations before amortization and other charges for each period of years since the start of operations, as reflected by the company's books, and the average net earnings from operations before amortization and other charges for each period of years since the start of operations. These last two items were calculated exactly the same as the comparable items explained in connection with page 1.

Page 4 shows the balances of the plant and equipment accounts of the Natural Gas Pipeline Company of America at the end of each year during the period of December 31, 1931, to December 31, 1938. The balances shown on this statement at December 31, 1931, were obtained by analyzing the job orders that were open at that date.

1034 Page 5 shows the operating revenue, operating expenses, and net earnings from operations before amortization and other charges of the Texoma Natural Gas Company. This statement also shows the accumulated net earnings from operations before amortization and other charges for each period of years since the start of operations and the average of the net earnings from operations before amortization and other charges for each period of years since the start of operations.

Page 6 is divided into two parts. Lines 1 to 19, inclusive, show the year end balances of the plant and equipment accounts, exclusive of leaseholds, and line 20 shows the accumulated expenditures for leaseholds. The balances at December 31, 1931 were obtained by analyzing the job orders that were open at that date. Line 20 is supplemented and explained by the following pages 7 and 8.

Page 7 shows the details of the leasehold account at December 31, 1931. This statement shows the amounts expended to acquire acreage from the various companies, as reflected by the books of the company, to December 31, 1931. Also shown on this statement are the amounts of construction overheads apportioned to this account. This sheet 7 details and explains the December 31, 1931 total accumulated expenditures for leaseholds shown on page 6, line 20, of this Exhibit No. 138.

Page 8 shows in some detail the amounts expended year by year for leaseholds and the total net expenditures for leaseholds to the end of each year from December 31, 1931 to December 31, 1938. This sheet 8 is supplemental to page 6 and more fully explains line 20 of page 6, and line 21 of page 2. On this page 8 I show the expenditures for leaseholds year by year, the cost of any property exchanged for leaseholds, the amount of cash received in any sales of leaseholds, the boot received in any exchanges of leaseholds, the net result of which is the additional expenditures for leaseholds. This statement shows that according to the books, the company had expended to December 31, 1938, a total sum of $15,893,513.08.

By the term "boot received," I mean cash received in an exchange of property, over and above the property received. Where we trade one lease for another and get $5,000 or $1,000 in addition, we call that boot received.

I obtained the figures contained in Exhibit No. 138 from the books and records of the companies.

(EXHIBIT No. 138 was offered and admitted in evidence without objection.

Offer of proof by Company Counsel and objections by counsel for the two commissions.

EXHIBIT No. 131 was offered and received in evidence with the understanding that defendants would be permitted to furnish additional sheets correcting any errors in arithmetic that appeared in that exhibit. Counsel for the two Commissions objected to this exhibit and were allowed exceptions.

EXHIBIT No. 134 was offered and received in evidence without objection.

1035 EXHIBIT No. 135 was offered and received in evidence over the objection for each of the two Commissions, who were allowed exceptions.)

1036 S. E. CAMPBELL, recalled by the defendants, testified as follows:

Direct Examination by Mr. Morgan.

(September 8, 1939)

I have testified in these proceedings before. I am secretary of defendants. As one of the duties of my office, I have custody and supervision of the records and books of account of both these corporations.

I have prepared and caused to be prepared under my direction some computations to be offered in this case that are predicated on the exhibits and testimony already in the case. In preparing those exhibits, I was instructed by counsel as to the subject matter to be covered. I prepared them in the form advised by counsel. I do not take the responsibility for the forms. The figures came from other evidence already in the case and I am prepared to point out that evidence in the course of my testimony.

I have prepared a total of four computations.

(At this point, counsel handed the reporter a 1-page document entitled "Computation Based on Field Price of Gas to Be Recovered by Texoma Natural Gas Company after January 1, 1939, and Costs of Drilling, Equipping, Maintaining, and Operating Wells. Witness S. E. Campbell" with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit 139 for identification.)

I have before me Exhibit 139. This exhibit is a computation to show the difference between, as termed in this exhibit, the gross value at the head of the well at the present field price of 4 cents per M.C.F. on the recoverable gas at 25 pounds abandonment pressure from Texoma's leases, and the cost of lifting this gas to the well head.

In the first line following "Total recovery January 1, 1939, through 1954 (from testimony of Dickinson and Bussard)," we have the figure 790,280,674 M.C.F. That figure is taken from the testimony of Mr. Dickinson and from a report prepared by Mr. Bussard, used in connection with his Exhibit 117. That is the total quantity of

gas which, according to their testimony, Texoma will be able to recover from its wells by the end of 1954.

In line No. 2, after the words "Gross value at the head of well at present field price of 4 cents per M.C.F." appears the amount $31,611,277. The figure 4 cents per M.C.F. was taken from the testimony of Mr. Dickinson, Mr. Hughes, and others who have testified in this hearing. The sum of money set out at the end of that line was obtained by multiplying the total volume shown in line No. 1 by 4 cents per M.C.F.

In line No. 3, captioned "Operation and Maintenance Expense from January 1, 1939, through 1954 (from an analysis of Exhibit Nos. 102 and 117)" appears the figure $9,805,029. Those figures were taken from an
1037 analysis of Exhibits 102 and 117, and represent the operation and maintenance expense of the production department applicable to the production of gas for the period January 1, 1939, through to the end of 1954. Exhibit 102 was prepared by and offered through Mr. Dickinson, and Exhibit 117 was prepared by and offered through Mr. R. M. Bussard. At the end of line 4, captioned "Capital expenditures of production department as of June 1, 1939 (from an analysis of Exhibits 102 and 117)" appears the figure $4,741,642. That figure was likewise taken from an analysis of Exhibits 102 and 117 and represents the capital expenditures for wells, lease equipment, and clean-out equipment. That was the figure to which Mr. Dickinson testified and which was carried into Mr. Bussard's Exhibit 117.

In line 5, captioned "Reproduction cost new, less viewed depreciation of wells completed and producing as of June 1, 1939 (from Exhibit 125)" appears the figure $2,892,755. That figure was taken from Exhibit 125 prepared by and offered through Mr. Hamilton and his associates.

I added together the sums shown in lines 3, 4 and 5 and arrived at the total shown in line 6, captioned "Total expense, maintenance and capital cost." The figure shown in line 7, captioned "Difference between amounts shown in lines 2 and 6" was arrived at in the manner indicated in the caption.

I have the working papers underlying all these figures and they will be available to Mr. Johaningsmeir and Mr.

Woodford and any other accountants whom the commission may delegate to check them with me.

(EXHIBIT 139 was offered in evidence over objections of counsel for each of the Commissions. The Examiner announced he would withhold his ruling on the admissibility of Exhibit 139 until the next session of the hearing.

Counsel handed the reporter a document composed of 2 mimeograph pages captioned "Natural Gas Pipeline Company of America and Texoma Natural Gas Company (Combined) Earnings Statement Covering Entire Life of Project" with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit 140 for identification.)

I have before me Exhibit 140 which was prepared by me and under my direction. This exhibit covers a combined earnings statement of the companies for the entire life of the project, beginning January 1, 1932, and extending to and including the end of 1954. The period from October 15, 1931, to the end of that year is not covered by the exhibit for the reason the books of the company were set up as of January 1, 1932. All previous transactions were capitalized.

Page 1 is a summary sheet which reflects the total revenues of the companies combined, the total operation, maintenance, and retirement expense, the total cost of the capital expenditures including replacements, gas reserves and working capital and the liquidating salvage value. It reflects the total revenue remaining after taking out the capital expenditures anad reflects the average rate of return on the average investment for the life of the project. By the last expression, I mean the average annual rate of return on the average annual investment throughout the life of the project.

1038 Under the sub-caption "Revenue," line 1 "From domestic sales," the figure recorded in column 1 was taken from Exhibit 138 to which Mr. Miller testified as being taken from the companies' books. In Mr. Kesinger's statement on future sales and revenue, he expressed his opinion that the average yearly income from domestic sales from January 1, 1939 on, as long as sufficient gas is available to meet the full domestic requirements, would not exceed the average realized for the three-year period 1936, 1937, and 1938.

For the period from January 1, 1939 to November 1, 1953, from a study prepared by Mr. Bussard, under Mr. Kesinger's supervision, there will be sufficient gas available to meet the domestic requirements. For this period of time we have applied to each year the average of the three-year period 1936, 1937, and 1938. After November 1, 1953, the amount of gas available will apparently progressively diminish up to the end of 1954. These figures were worked out in Mr. Bussard's study and we have used those figures and computed the amount of money for that period of time strictly in accordance with the companies' domestic sales contracts.

Those figures for the decreasing quantity of gas to be produced from and after November 1, 1953, on through the year 1954 were the same figures employed in the computation set up by Mr. Bussard in his Exhibit and explained in his testimony.

The figure set out in column 3 is the sum of the amounts shown in columns 1 and 2. The figure $9,752,872 shown in column 4, is the yearly average for the entire period and is obtained by dividing the amount contained in column 3 by 23.

The figure in line 2, captioned "From industrial sales" was obtained from Exhibit 138. In Mr. Kesinger's testimony on future sales revenues, he stated that in his opinion the income from industrial sales, as long as gas was available to meet all the industrial requirements, would not exceed the average realized from industrial sales through the years 1936, 1937, and 1938. From Mr. Bussard's study, gas available will meet the requirements of the industrial sales from January 1, 1939 to September 1, 1952.

For this period, we have arrived at the total revenue by applying to each year the average realized by the two companies during the three-year period 1936, 1937, and 1938. After September 1, 1952 to November 1, 1953, the gas available for industrial purposes progressively diminishes until by November 1, 1953 there is no more gas available for industrial sales, except that which would fall under domestic contracts. So during this period from September 1, 1952 to November 1, 1953, we have applied the gas available for industrial purposes to the industrial contracts, carrying the higher prices, dropping out the lower price contracts. In computing the

revenues from industrial gas during that period of decline from September 1, 1952 to November 1, 1953, we have only discarded so much of the lowest price gas as will not be available and have applied the available gas to the highest price gas under our contracts for industrial gas during that period.

Column 3 is the total of columns 1 and 2. Column 4 is the yearly average for the entire 23-year period. The item "Revenue from Texoma's Field Sales" represents sales to the Lone Star Gas Company and the Coltexo Corporation. In Mr. Dickinson's testimony, he stated that the wells from which Coltexo was taking gas would be abandoned by the end of 1941. During this period the amount available
1039 from these wells to Coltexo Corporation progressively diminishes, and these amounts taken from Mr. Bussard's study were used in computing the revenue from the Coltexo Sales. These figures appear in column 2. The figures in column 1 are taken from Exhibit 138 and Mr. Miller's testimony.

The Lone Star Gas Company sales extend throughout the period at an amount equivalent to the quantity of gas they took from Texoma during the year 1938. That is to the end of 1944. After 1944, the gas available from the wells serving the Lone Star Gas Company progressively diminishes and the amounts used were taken from Mr. Bussard's study which reflects these quantities by years. There is no allowance in these figures for any gas that might be produced from other wells to be drilled down there where the wells connected with the Lone Star Gas Company are located.

The price used in determining the income from these two sales is the price which is now contained in the sales contracts with these two companies and is based on the present price under the existing contracts. Column 3 is again the totals of column 1 and 2, and column 4 is the yearly average for the 23 years. Line 4 is simply the total of lines 1, 2, and 3.

Passing on to line 5, caption "Revenue from gasoline sales" the figures contained in column 1 were taken from Mr. Miller's Exhibit 138. The amount shown in column 2 was taken from Mr. G. M. Davidson's testimony as reflected in Exhibit 121. The amount shown in column 3 is the total of lines 1 and 2 and the amount shown in column 4 is the yearly average for the 23 years.

In line 6, caption "Revenue from other operating in-

come" in each one of the 4 columns, this item represents house rents less the cost of maintaining the company houses. The amounts shown in column 1 were taken from Mr. Miller's Exhibit 138. The maintenance portion that was deducted in arriving at the amounts shown in column 2 was taken from Exhibits 94 and 98 to which Mr. Powers and Mr. W. H. Davidson testified. The gross revenue from which this maintenance was deducted was based on the company's present rent schedule for company houses and covers the present houses as well as the future houses to be constructed. It is assumed that all the houses now in existence and which will hereafter be constructed in line with the testimony of the witnesses who have testified on that point will be fully occupied and that rents will be paid throughout the remainder of the period. That is true with the exception of some bunk houses the rooms in which are not 100% occupied. All the houses are occupied.

The amount shown in column 3 is the total of columns 1 and 2, and the amount shown in column 4 is the average for the 23-year period. The total revenue is derived from the addition of the figures in lines 4, 5, and 6 in each one of the columns.

The amount shown in column 1 of line 8 was taken from Mr. Miller's Exhibit 138. The amount shown in column 2 was taken from the exhibits of the various superintendents who have testified and whose exhibits were summarized by Mr. Bussard in Exhibit 117. In addition to the figures taken from these Exhibits, it was necessary to add to those figures the amount of payments which will be made to

Canadian River Gas Company covering the payment
1040 for gasoline extracted from gas which they furnished
to Colorado Interstate for resale to us. That gas is treated at our Fritch gasoline plant.

Going back to line 5, captioned "Revenue from gasoline sales" it will be noted that Mr. G. M. Davidson's figures of gross revenue include all the gas which will be produced by that gasoline plant at Fritch and approximately ¼ of that gasoline comes from the gas produced on the Canadian River's reserves and purchased by us from Colorado Interstate Gas Company. I say approximately 25% because that figure varies slightly from month to month. In order to offset the inclusion of that amount of gasoline for which under contract we must account to the Canadian River, we have added that amount to the operating cost. Otherwise, we would be including in our revenue money

that in fact goes to the Canadian River. I do not have with me the working papers showing how I arrived at the net amount which I added in there. It is among the underlying work sheets supporting this exhibit and it, together with all the other facts underlying this exhibit, will be available to the accountants of the two commissions if they desire to check my figures.

The amount shown in column 3 is the total of columns 1 and 2 and the amount shown in column 4 is the average for the total period of 23 years. You will note that in the next line we make a deduction in each one of the columns for "Company used gas" as shown by the word in parenthesis "Deduct". This is explained by the circumstances that the companies for their bookkeeping purposes to reflect the departmental operating cost make a charge to the departments for the gas each department uses. Since the cost of producing that gas is already in operating expenses in various forms, we deduct the charge made to the departments in the aggregate in order to avoid any duplication of charges. The amount shown in column 1 is taken from Mr. Miller's Exhibit 138. The amount shown in column 2 is taken from the departmental exhibits summarized in Exhibit 117. Column 3 is the total of columns 1 and 2 and column 4 is the average for the 23 year period.

In line 10, captioned "Maintenance Expense", the amount shown in column 1 is taken from Exhibit 138. The amount shown in column 2 was taken from the various exhibits of the department superintendents summarized in Exhibit 117 except that we have deducted from those expenses shown in those exhibits the expense of retiring property which we have set out here as a separate item. The two lines 10 and 11 constitute the same totals as those set out in the exhibit to which I have referred. The totals in column 3 and the average in column 4 were obtained in the same way as the other totals and the averages of this exhibit to which I have testified.

In the line captioned "Expense of retiring property" the amount shown in column 1 was taken from Exhibit 138, the amount shown in column 2 was taken from an analysis of the department superintendents' exhibit, summarized in Exhibit 117, and represents the cost of retiring the property to be replaced. The amount shown in column 3 is the total of columns 1 and 2 and the amount shown in column 4 is the average for the 23-year period.

The figures in line 12, captioned "Maintenance contingen-

cies (10 per cent)" are based on the testimony of several witnesses. In the testimony of Mr. Kesinger, Mr. G. M. Davidson and the departmental superintendents, they stated that the maintenance items included in their exhibits which were summarized in Exhibit 117 were the minimum maintenance expenses that they would foresee at this
1041 time but they did not allow for unforeseen or contingent items. In Mr. Biddison's testimony in respect to the maintenance exhibits of the various departments, he stated that in his opinion, the figures reflected by the department heads should be increased at least 10% to cover the unforeseen items that always occur. On the basis of the testimony of these various men, I have provided in this Exhibit an item of maintenance contingencies of 10% which is 10% of the amount shown for maintenance expenses and the expense of retiring property shown in lines 10 and 11. Through this procedure, I arrived at the amount shown in column 2 which is the same amount reflected in column 3 and column 4 reflects the 23-year average.

The figures represented in line 13, captioned "Net operation, maintenance and retirement expense" are the sum of the amounts reflected in lines 8, 10, 11, and 12, less the amount shown in line 9.

The figures shown in line 14, captioned "Revenue remaining for amortization and return" were obtained by deducting from the amount shown in line 7 the amount shown in line 13. The amount shown in column 1 of line 15, captioned "Capital expenditure excluding cost of gas reserves" is the aggregate capital expenditure to date including replacements but deducting any salvage obtained from the materials reclaimed as obtained from analysis of the books and records. The amount shown in column 2 was taken from exhibits of the various departmental superintendants on future capital expenditures and replacements as summarized in Exhibit 117. The amount shown in column 3 is the total of columns 1 and 2.

In the testimony of Mr. Kesinger, Mr. G. M. Davidson and the departmental superintendents, they stated that the items of replacement as reflected in their exhibits were only those that they could foresee at this time and did not include any unforeseen items or contingent items. In Mr. Biddison's testimony with respect to the items of replacement, he stated in his opinion that the amount provided for replacements in the various exhibits of the depart-

mental superintendents should be increased by at least 10% to cover unforeseen and contingent items.

On the basis of the testimony of these men, I have included an item for replacement contingencies of 10%, that is 10% of the total cost of replacements as obtained from an analysis of the exhibits of the various department superintendents after deducting the current salvage obtained from the retirement of the property replaced. These are the figures set out in line 16 under the caption "Replacement contingencies."

The figures shown in column 1 of line 17 under the caption "Cost of gas reserves" was taken from Exhibit 138 prepared by Mr. Miller. The amount shown in column 2 totaling $2,800 is an expenditure which has been made during the first part of 1939 and is reflected on the books. The amount shown in column 3 is the total of the amount shown in columns 1 and 2.

In line 18, captioned "Working capital" the figure $975,000 was taken from the testimony of Mr. Eastman and from Exhibit 125. That figure is applicable from the beginning of operations and is not repeated in the second column. We did not add to the working capital from year to year, since this figure does not change.

The figures shown in line 19 under the caption "To-
1042 tal capital expenditure and working capital" are the totals of the figures shown in lines 15, 16, 17, and 18 for the first three columns. The fourth figure, $71,777,589, is the average of the yearly averages. That is obtained by taking the sum of the capital expenditures and working capital at the beginning and end of each year, dividing that sum by 2 each year throughout the period and adding together the 23 yearly averages, dividing that sum by 23, which gives the average yearly average.

The figures set forth in lines 21, 22, 23, and 24 under the sub-caption "liquidating salvage value" were taken from Exhibit 122 as corrected by Exhibit 124. That exhibit was explained by Mr. G. M. Davidson. The amount shown in line 23, entitled "Working capital cash," is the total cash used by Mr. Eastman in the computation of his working capital. We have reflected it as salvage at full value. The amount shown in line 24 is the total of lines 21, 22, and 23.

Question by the Examiner.

I have included in line 18 working capital, which is made up of cash, material, and supplies and other items. You will note in line 22 we show the salvage of the warehouse materials. We reflected the cash in line 23.

Direct Examination by Mr. Morgan Resumed.

The total in line 25, captioned "Total Capital Expenditures and working capital, less total liquidating salvage value (total amortization) $78,284,009," is the difference between the amounts shown in column 3, line 19, and the amount shown in column 3, line 24.

The amount reflected in line 26, column 3, is the difference between the amount reflected in column 3, line 14, and the amount reflected in column 3, line 25. The amount shown in line 26, column 4, in the amount $4,589,790 is the average of the amount shown in column 3 arrived at by dividing the amount in line 26 by 23. That gives the yearly average of the revenue remaining for return. The figure 6.39 shown in line 27, caption "Average rate of return" is determined by dividing the $4,589,790 shown in line 26, column 4, by $71,777,589, which is the average total capital expenditure and working capital shown in line 19, column 4.

On page 2, the first column is the same as column 1 from lines 1 to 19 shown on page 1. The last two columns on the page are the same as columns 3 and 4 of page 1 to and including line 19. The lines in between are merely the break-down of these figures by years for the years 1939 to 1954, inclusive. That is the break-down of the figures shown in column 2 of page 1.

(EXHIBIT 140 was offered in evidence. Counsel for each of the Commissions stated objections to the admitting of this exhibit, and the Examiner reserved his ruling until the next session of the hearing.

At this point counsel handed the reporter a document captioned "Natural Gas Pipeline Company of America and Texoma Natural Gas Company (Combined) Earnings Statement Based on Book Cost as of January 1, 1939," with the request that it be marked for identification. At the direction of the Examiner, such document was marked Exhibit 141.)

1043 I have before me Exhibit 141 which was prepared by me and under my direction. This exhibit is a combined earnings statement based on book cost as of January 1, 1939 of the defendants. By book cost I mean the actual cost as

reflected in the books of the companies insofar as those costs have been entered down to January 1, 1939. The figures shown in column 2 of lines 1 to 10, inclusive, are the same figures shown in the same lines in column 2 of the same lines of Exhibit 140 and were derived from the same sources. Since this exhibit covers the earnings for 16 years, the amounts reflected in lines 1 to 10 inclusive of column 3 are obtained by dividing the amounts in column 2 by 16. This 16-year period extends from January 1, 1939 through the year 1954. The basis for the figure in column 2 of line 11 is the same as stated in connection with the item "Maintenance contingencies" in exhibit 140 and is 10% of the amount reflected in line 10. The figures shown in column 3, line 11 were obtained by dividing the amount shown in column 2 by 16. The amount shown in column 2, line 11 of this exhibit differs from that shown in column 2, line 12 of Exhibit 140 for the reason that included in the maintenance contingency in Exhibit 140 was 10% of the cost of retiring property. In this exhibit, the cost of retiring property has been classified under reserves for replacements and is shown in line 15; and the 10% contingencies on this item is included in line 17 and has been omitted from the contingent item in line 11.

Line 12 is the sum of lines 8, 10, and 11, less the figure shown in line 9. The figures shown in columns 2 and 3, line 13, captioned "Revenue remaining for replacement, amortization and return" represent the difference between the amounts shown in the two columns in line 7 and the amounts shown in the two columns in line 12.

The figures $3,105,244 and the average figure $194,078 were obtained from an analysis of Exhibit 117. The latter figure is the result of dividing the former figure by 16.

The figure $109,449 shown in line 16, cost of retiring capital replaced was obtained from an analysis of Exhibit 117 and the amount shown in column 4 is the 16 year average. It is the same figure shown in column 2, line 11 of Exhibit 140.

The amount $541,253 shown in line 16 under the caption "Salvage value of retirement (deduct)" was taken from an analysis of Exhibit 117. The amount shown in column 3 is the 16-year average. This item, salvage value of retirements, does not refer to the liquidating salvage value which was the subject of Exhibit 122 entered by the testimony of the witnesses, G. M. Davidson, Taubman, Solow and Smith, but the salvage realized when the material is

placed in stock for future use or which is used in construction work in progress or trade in for costs of part of new material, such as automobiles, mechanical office equipment, and so forth. When this material is carried into other work, or other equipment, or into the warehouse it is retired at its original cost.

The item under the caption "Replacement contingencies (10 per cent)" was obtained on the same basis that the replacement contingencies were determined in Exhibit 140, except that the item shown in line 17 in Exhibit 141 is 10%
of the amount shown in lines 14 and 15 column 2,
1044 less the amount shown in line 16. The totals in column
2, line 16 were taken from an analysis of Exhibit 117.
The totals shown in line 18 are the sums of the amounts shown in lines 14, 15, and 17, minus the amount shown in line 16.

The figure $49,830,479 shown in line 18 under the caption "Capital expenditures per books, excluding gas reserves" was taken directly from Exhibit 138 submitted by Mr. Miller. The figure $2,485,079 shown in line 20 under the caption "Viewed depreciation (deduct)" is the amount which represents the viewed depreciation shown in Exhibit 125 adjusted to the amounts shown by the companies' books by accounts. There are quite a number of computations involved in these adjustments, because we had, in Exhibit 125, to spread back the overheads by accounts and then arrive at a per cent depreciation which we applied to the amounts in the corresponding accounts on our books. This amounts to a percentage relationship derived from Exhibit 125 applied to the accounts as stated on the books. The steps we took and the figures we used in arriving at this figure are among the underlying work sheets supporting this exhibit and will be available for inspection and checking.

The figure $12,402,884 shown in line 21, captioned "Cost of gas reserves, less depletion to January 1, 1939" is arrived at by computation based on the total cost of the companies' gas reserves to date less any salvage realized as reflected by the books. That amount is multiplied by a factor which is the ratio of the recoverable reserves at 25 pounds abandonment pressure under the leases of Texoma as of January 1, 1939 shown by Exhibit 28 and supporting testimony and the amounts recoverable at 25 pounds abandonment pressure under the same leases on August 1, 1931, which was the date Texoma acquired its leases. The ratio

of these two numbers is the factor used to multiply by the total book cost to date to arrive at the figure of $12,402,884 shown in column 1. By book costs in this connection, I mean the actual cost of the leases as reflected by the books.

The deduction for depletion is not the same figure reflected on the books of the company for the item "Depletion of reserves." The company books reflect depletion based only on the gas taken out of the leases by the company, while this figure is based on all gas that has passed out or from under the leases between August 1, 1931, and January 1, 1939 inclusive. In other words, in this exhibit we have depleted the leases not merely by the quantity of gas which Texoma has produced from the leases but by the total quantity of gas which has moved out from under those reserves between the two dates last above mentioned both by production and by drainage to other wells.

The figure $9,338,983 reflected in column 2 of line 22, captioned, "Cost of additional property" was taken from the exhibits of the departmental superintendents covering additional capital expenditures in the future, which were summarized in Exhibit 117. That is, the total additional capital expenditures reflected by those exhibits less the amounts which will be paid out for replacements. This represents property in addition to that which we held on January 1, 1939. It does not include any replacements.

The figure shown in line 23, captioned "Going concern value" was taken from the testimony of Mr. Hamilton and "Working capital" shown in line 24 was taken from the testimony of Mr. Eastman and is reflected in Exhibit
1045 125. Mr. Emery also testified on the subject of going concern value. I do not have the exact figure in mind, but it was slightly in excess of the $8,500,000 shown in this exhibit. I took the lower figure in this computation. The total shown in line 25, column 1, is the sum of the amounts shown in lines 19, 21, 23, and 24, less the amount shown in line 20. The total shown in column 2 of the same line is the sum of the total shown in column 1 and the amount shown in column 2, line 22, which gives a total of $78,562,267. The amount last stated is the total capital employed in the course of the 16-year period.

In line 26, we have the caption "Total rate base," which is an average figure and is the average of the 16 yearly averages amounting to $75,305,459. The figures liquidating salvage shown in lines 28, 29, 30, and 31 are the same figures as those reflected in lines 21, 22, 23, and 24 of Exhibit 140

and were obtained from the same sources. The total, $77,513,135, shown in line 32, under the caption "Total to be amortized" is the difference between the total shown in column 2, line 25, and the total shown in column 2, line 31.

The amount shown in column 2, line 33, $69,960,256, is the amount if set aside in 16 equal annual amounts of $4,372,516, the amount shown in column 3, beginning December 31, 1939, with interest compounded annually at the rate of 1.35% would equal by the end of 1954 $77,513,135, the total shown in column 2, line 32.

The total shown in column 2, line 34, is the total shown in line 13, column 2, less the totals shown in columns 2, line 18, and line 33. The amount shown in column 3 of line 34, is the yearly average of the amount reflected in column 2. The figure 4.79% shown in line 35 under the caption "Rate of return" was determined by dividing the amount shown in column 3, line 34, $3,603,964, by the amount shown in column 3, line 26, entitled "Total rate base" or $75,305,459. The result of this division gives the percentage of 4.79%, which is the average rate of return based on the average annual revenues and the average capital employed.

The first column, page 2, is the same as column 1 on page 1 down to and including line 26. The last two columns are the same as columns 2 and 3 on page 1 to and including line 26, the other columns are the yearly break-down of column 2, page 1, for lines to and including line 26.

(EXHIBIT 141 was offered in evidence. Counsel for each of the commissions objected, and the Examiner deferred his ruling on the admissibility of the exhibit until the next session of the hearing.

At this point, counsel handed the reporter a document captioned "Natural Gas Pipeline Company of America and Texoma Natural Gas Company (Combined) Earnings Statement Based on Reproduction Cost New, Less Existing Depreciation as of June 1, 1939," with the request that it be marked as an exhibit for identification. At the direction of the Examiner, such document was marked Exhibit 142.)

I have before me Exhibit 142. This exhibit was prepared under my supervision and is a combined earnings
1046 statement of the two companies based on the reproduction cost new, less existing depreciation as of June 1, 1939. By "reproduction cost new, less existing depreciation" I am referring to the reproduction cost new of the physical property as testified to by Mr. Hamilton and his associates and shown in Exhibit 125 and the viewed depre-

ciation as reflected in this same exhibit which is the depreciation prepared and testified to by Mr. Biddison. In other words, this is a computation based on the figures which speak for themselves in the exhibit, except that insofar as the value of the physical property is concerned we have used the figures which are arrived at by deducting viewed depreciation from the reproduction cost new of the properties owned and held by the companies as of June 1, 1939. The other figures contained in the exhibit are figures which are explained by the captions in the several lines opposite those figures.

It will be noted that this earnings statement is based on a period beginning June 1, 1939 and extending to December 31, 1954, or a period of 15 years and 7 months. The figures in columns 2 and 3, to and including line 18 were arrived at in the same manner as the figures for lines 1 to 18 inclusive shown in Exhibit 141 were adjusted so as to leave out the first 5 months of 1939 and the figures then represent the period of 15 years and 7 months. We took out the first 5 months of 1939 in this study instead of leaving them as we had in Exhibit 141 because in Mr. Hamilton's reproduction cost new study, he applied his study to the property of the companies as of June 1, 1939 and we did not attempt to apply this back to the beginning of the year. We started at the same time his valuation was effective.

The amount shown in column 1, lines 19 and 20, were taken from Exhibit 125. The amount shown in column 1, line 21, is the value of the gas reserves as testified to by Mr. Wallace. Those figures are based on Exhibit 131 which has been received in evidence. In connection with the testimony of Mr. Wallace, subject to some corrections in arithmetic, the figures here used are the uncorrected figures. When those errors in arithmetic in Exhibit 131 have been corrected, we will correct Exhibit 142 to conform to it.

The amount shown in column 2, line 22, after the caption "Cost of additional property" was taken from an analysis of the cost of additional property shown in Exhibit 117, with the property which was installed during the first 5 months of 1939 omitted, as these items were included in Mr. Hamilton's figures. The amount shown in column 1, line 23, "Going concern value" was taken from Mr. Hamilton's testimony and the amount shown in column 1 of line 24, entitled "Working Capital", was taken from Exhibit 125.

The total in column 1, line 25, is arrived at by adding the amount shown in lines 19, 21, 23, and 24 and deducting the

amount shown in line 20. The total shown in column 2, line 25, is the sum of the total in line 25, column 1 and line 22, column 2. The amount $82,245,330 shown in line 26 after the caption "Total rate base" is the average of the yearly averages based on a period of 15 and 7/12 years. The figures in the next 5 columns under the caption "Liquidating salvage value" for "Capital expenditures," "Warehouse stocks," "Working capital cash," and "Total liquidating salvage value" shown in column 2, lines 28, 29, 30, and 31 are the same as those shown in lines 21, 22, 23, and 24 of Exhibit 140.

The amount, $84,294,995, shown in line 32 as the total
1047 to be amortized, is the difference between the amount shown in column 2, line 25, and the amount shown in column 2, line 31.

The amount of $76,302,249 shown in column 2, line 33, after the caption "Amortization allowance" is the amount which, if set aside in 15 annual payments, each in the amount of $4,896,401, shown in column 3 of the same line, beginning June 1, 1939, and one additional payment at the end of 1954 equal to 7/12 of $4,896,401, together with an interest rate compounded annually at 1.35%, would by the end of 1954 equal $84,294,995, the total amount to be amortized as shown in column 2, line 32.

The amount shown in column 2, line 34, is the amount shown in line 13, column 2, less the amount shown in line 18, column 2, and line 33, column 2. The amount $3,031,987 shown in column 3, line 34, is the yearly average of the amount shown in column 2, same line.

The figure 3.69% shown in line 35 after the caption "Rate of return" results from dividing the total in column 3, line 34, by the total in column 3, line 26, of this Exhibit 142.

On page 2 of this exhibit, the first column is the same as column 1 on page 1 to and including line 25. The amount shown in the last two columns of this sheet are the same as columns 2 and 3 on page 1 to and including line 26. The second column on this page is a monthly average for the last 7 months of the year 1939. This represents just a monthly average for the last 7 months of 1939 and is not reflected on page 1. The figures shown in column 2 of page 2, Exhibit 142, are 7/12 of the amount shown in column 2 of the same page of Exhibit 141.

The other columns under the captions "1940" through "1954" respectively are the break-down into the yearly

figures of the figures shown in column 2, page 1, lines 1 to 26 inclusive.

(EXHIBIT 142 was offered in evidence. Counsel for each of the Commissions objected, and the Examiner withheld his ruling on the admitting of this exhibit until the next session of the hearing.)

1048 (October 2, 1939.)

(Counsel presented the affidavits of Robert Ricks and others, all bound together in a document styled "Natural Gas Pipeline Company of America—Texoma Natural Gas Company. Affidavits of Appraisal of Lands in Fee and Rights of Way" with the request that they be marked as an exhibit. At the direction of the Examiner, the documents collectively were marked Exhibit 143 for identification. EXHIBIT 143 was offered in evidence. At the request of the counsel for the two Commissions, the Examiner announced that his ruling would go over until the following day.

At this point, counsel handed to the reporter the data furnished by witness G. M. Davidson, entitled "Natural Gasoline Production and Prices", with the request that the document be marked as an exhibit for identification. At the direction of the Examiner, the document was marked Exhibit 144 for identification. EXHIBIT 144 was offered in evidence. At the request of counsel for each of the Commissions, the Examiner deferred his ruling on admitting this exhibit until the following day.

Counsel then handed the reporter a document styled "Reconciliation of Statements Included in Exhibits 136 and 15", prepared by Mr. Miller at the request of the Examiner, with the request that it be marked as an exhibit for identification. The document referred to was at the direction of the Examiner marked Exhibit 145 for identification. EXHIBIT 145 was offered in evidence. At the request of counsel for each of the Commissions, the Examiner deferred his ruling on that exhibit until the following day.

At this point, counsel handed the reporter a 1-sheet document styled "Texoma Natural Gas Company, Summary of Market Value of Leases, By R. J. Wallace," explaining that it was a correction of the summary page of Exhibit 131. At the request of the Examiner, the document was marked Exhibit 146 for identification. EX-

HIBIT 146 was offered in evidence. At the request of counsel for the two Commissions, the Examiner deferred ruling on the offer until the following day.)

1049 ROBERT H. DELAFIELD, a witness for defendants, testified:

Direct Examination by Mr. Morgan.

(October 2, 1939.)

My name is Robert H. Delafield. I live at Hewlett, Long Island, New York. My place of business is at 61 Broadway, New York City.

I am vice president of the Columbia Gas & Electric Corporation, vice president and director of Columbia Engineering Corporation, a subsidiary management company, and a vice president of most of Columbia Gas & Electric Corporation's principal subsidiaries and a director of many of them. For some 17 years before I went to Columbia Gas & Electric Corporation in 1931 as a vice president I was employed in various capacities by the National City Bank of New York or the National City Company. Those capacities included early training as a statistician and securities salesman. I was subsequently managing director of the company's business in New England and a buyer of securities in New York.

I went with Columbia Gas & Electric Corporation as financial vice president in which capacity I have continued to date. My duties as financial vice president include the placing of securities for the purpose of raising funds for the companies of which I am an officer. Since going with the company I have personally negotiated the sale of all securities sold by Columbia or any of its subsidiaries, and I have also been in charge of setting up those securities. For 17 years, with the exception of time out for the last European war, my time was devoted wholly to the securities business. In the past eight years it has been an important part of my duties but only one of a variety of duties. I have had occasion in connection with my duties to inform myself concerning what is commonly referred to as the rate of return earned by corporations and the relation of that rate of return to the issuance and placing of securities for the purpose of raising capital.

As a securities buyer that is, of course, an important element in the consideration of the credit of any corporation. Since I have been connected with the utility business I have carried on and had carried on under me extensive studies into the subject of rate of return, both from the standpoint of the economics of our own business and also from the standpoint of appearances before regulatory commissions. I have testified before regulatory bodies on this subject. In connection with my testimony and in preparing myself to testify we made a great many intensive studies over a long period of years, and I should say that in the last nine years I have had at least two assistants who devoted a quarter or a third of their time to this particular subject. They worked under my direction. That study has involved the study of business and returns and profits on business not only in this country but in other countries, and not only in present and in recent years but in the past. We are not through with that investigation yet but we have done a great deal of work over a 9-year period.

Rate of return is the rent for capital. On the income statement there is gross corporate income, or income available for interest. That is the income that a company makes after the payment of all its operating expenses and after accruals for taxes, depreciation, amortization and similar charges. In other words, it is the amount of money that the provider of the capital obtains for permitting his capital to be used in any enterprise.

That includes all security holders. Bondholders, if there are any, preferred stockholders, if there are any, common stockholders, small creditors, bank lenders, and so on.

Particularly in extractive industries, as in the case of the natural gas business, where the business of the company is selling its assets, it is common, or not infrequent, to set up an amortization fund or reserve to return to the investors the amount of money that they used to purchase those assets. That is not rate of return or any part of rate of return. The investor in an extractive industry is entitled to receive the capital that he put in plus a proper return on that.

I would like to illustrate that, if I may, with the simple example. If a man bought a country grocery store, buying the stock of the store for say $2,000 and you do not

allow amortization you would be saying to that man "You can run this business, you can make what profit you can on it, but at the end of the period when you wish to get out of business you must throw that $2,000 stock away, you are not allowed to get back the money which you paid for it." The natural gas business is exactly the same. You do not have grocery store stock but you have a stock of gas in the ground which you purchase and which you deliver with pipes instead of a delivery wagon. Those are the things you have in your business that you need to sell, your inventory of material, and each time you sell some of it you have less of it.

The amortization is a provision for the return of the capital to the investor. The rate of return may be distinguished from the return of the capital by referring to it as the return on the capital. The rate of return on any business or any investment is made up of two parts: first, is the fundamental section of the rate which is called "pure interest". That is the rate that any investor would receive if he were fortunate enough to make a risk-less loan. The other part is what is known as a "risk premium", which is the amount in addition to pure interest that it is necessary to offer to the investor to attract or entice his money into any venture. Pure interest is a thing that at any one time is always the same. It may vary from time to time. Risk premium, however, not only varies from time to time but is different at any one time for a different type of risk.

Pure interest is the same for all borrowers of any kind or type. Now a given borrower at a given time might borrow at less than the pure interest rate by reason of some peculiar condition. As an example of that is a municipality borrowing on a tax exempt security. Tax exemption might force the rate on that security below the pure interest rate. Simultaneously a gas company might borrow money without tax exemption, with substantial risk, and while the factor of pure interest will be the same in the two investments the actual rate of return will be, of course, totally different.

I do not mean by pure interest the least rate of interest that is being paid by anybody as of a particular time. It is very difficult to put your finger on the exact 1/100 of 1 per cent of determination of what pure interest
1051 would be at any given time. There are a great many measures. By applying many measures you

come to a judgment figure. It has been frequently done over a long period of years. Ordinarily, you would look to the yield on very high type securities, as, for example, Government bonds. Now you have frequently periods, as you have in my opinion in the last seven years, when Government bonds generally, for a multitude of factors, sell at much less than the pure interest rate. There are other factors in there.

During the past seven years I believe that we have been in a period of marked credit inflation that tends to raise the price of securities and consequently lower the yields. That would not affect the pure interest, the actual pure interest rate existing at that time, but it might affect the price at which securities were selling in a free and open market. Markets are sometimes supported. As in the case of Government bonds, some three weeks ago you had a short decline on news that affected the credit where immediately the risk premium was coming into play, but the market was supported and resultant prices do not give you a true index of pure interest or risk premium. There are perhaps better measures that you can apply. One that would give you a good index would be the investment of a very large and diversified fund. For example, last year, at the end of 1938, the savings banks in New York stated a total bond investment of somewhat over $2,350,000,000. That was a widely diversified investment, held by many banks in securities that had been purchased under the New York Savings Bank Law, which is a rigid law, supposed to prevent the investment of the savings banks in unduly risky securities. On that huge fund the return for the year 1938 was 2.87 per cent. Now that is probably a pretty good index of what pure interest was during the year 1938. The per cent I have stated was the gross return on the total bond investment account of all savings banks in New York State, and against that return, of course, was the cost of operating those savings banks. They had other assets too, real estate mortgages and what not, but against that earning would have to be assessed the cost of operating the fund.

There are a great many reasons that might affect the yield on a given security. I have used Government bonds as an example. There might be a variety of reasons at any one given time from the standpoint of financial institutions, banks, why the liquidity of Government securities would encourage investment at much less than the pure interest

rate at any given time. There are other advantages to banks, particularly banks that are members of the Federal Reserve system, in purchasing Government securities. The ability to immediately rediscount them gives them a value other than their investment value. This characteristic of liquidity applying to Government bonds would attract any other type of investor as well as banks. In situations confronting business and industry such as we have had in the past few years there has been more capital than there were uses to which to put it and the investor, as a matter of fact, had the option of allowing his money to lie idle or put it in something that would yield him some return until he could find a place where he was willing to put it and take his chances on a higher return. To such an investor it is desirable to have his money in a liquid investment such as a Government bond, so that the moment that the opportunity arose he could shift that capital from a temporary investment where he was just getting what return he could in the meantime and put it into the investment which he really desired at a return which was satisfactory to
1052 him. We have had a perfect example recently in the sharp, sudden decline not only in the market for Government bonds but in the market for all high grade bonds in general, that was synchronized with the declaration or the outbreak of war in Europe. I think the underlying reason for a sharp decline in the bond market was that American investors were freeing their capital, getting it into the form of money so they could reinvest in other undertakings, for example only, in the stocks of industries that they thought would be quickly benefited by war. These investors run to sell these bonds and at the same time other investors, like banks, try to get out and save themselves losses before the market breaks. Thus we had a cumulative effect that resulted in the breaking of bond prices.

Risk premium is the part of the total rate which compensate an investor for the risk that he runs in any given investment. I think it may clarify it if I remind you that the rate on short term money is always less at a given moment than the rate on long term money. This is a simple example. The reason is that the average investor has a better idea of what is going to happen in the immediate future than he has as to the distant future. The risks of making a long term investment are greater than the risks of making a short term investment. If a given company

went to the public at a given moment and asked for a six months' loan and a 20-year loan we all know from experience that the rate on the 20-year loan would be higher. That is the public's appraisal of the added risk in that long period.

There are other risks involved than the time element in making investments. Each industry has risks of its own which are peculiar to it, and there are some risks that are common to all industry. I should say it is never possible to figure out the exact per cent that would compensate for given risks although it is, of course, possible to figure out what measure the public will put on that risk. The price of a security in the market, if it is selling in the o en market, is made by a great many buyers voting with t ir dollars to buy or sell, and it is that expression of op ion which is absolute and final that shows you what co pensation they desire for particular risks. When you are trained in the pricing of securities and the analysis of these risks, and of that opinion on prices, as expressed by the public in their buying and selling, you can appraise the amount of risk premium that is required for a given risk to attract capital to it.

At any one moment if the Natural Gas Pipeline Company of America wants to finance, it would have to finance in the market in competition with not only all other people who wanted to finance at that particular moment, but all other people who had securities outstanding at that moment. For example, if this company offered its stock at a price which compared, on a risk premium basis, unfavorably with the stock of General Motors, or American Can, or some other undertaking, it would be almost if not entirely impossible to dispose of that stock. Economically, you cannot sell the same commodity in the same market at two prices at the same time. When you are selling credit you are merely selling it as you would butter.

Even a moderately informed investor if he were considering the purchasing of securities of a natural gas pipeline and producing company, would look around to see what other securities could be had for and the
1053 returns on those other securities. In fact we have a most complicated machinery set up to prevent the investor from looking at just one thing when he makes an investment.

That is one of the important elements in the Securities Act of 1933 which is administered by the Securities and

Exchange Commission. The whole purpose of that Act is to inform the public as to investments and prevent them from looking only at one thing and thus being uninformed.

In addition to the information available through the administration of that Act, the investor ordinarily undertakes to inform himself concerning opportunities in securities in general when he is contemplating the purchase of a security. Without exaggeration, having personally sold millions and hundreds of millions of dollars worth of securities, I know from experience that in practically every sale I have ever made when price became the final consideration, the investor, no matter who he was, always looked at price on a comparative basis and compared it with the price of other securities.

I have made studies of the rates of return on various businesses in the Chicago district.

(At that point counsel handed the reporter a document captioned "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Data Concerning Rate of Return, Witness R. H. Delafield" with the request that it be marked for identification. At the direction of the Examiner the document was marked Exhibit 147 for identification.)

Exhibit 147 is a list of 128 companies, each one of which has some type of securities listed on the Chicago Stock Exchange. It includes all of the companies with securities listed on the stock exchange except regulated companies, finance companies, and companies actually in bankruptcy or receivership. In other words, it is, as far as we can make it, a complete list of those companies whose securities are listed or traded in on the Chicago Stock Exchange, which companies are not under regulation, with the two exceptions of finance companies and companies in bankruptcy. It includes not only profitable companies, but companies which in some of the three years shown, that is 1936, 1937, and 1938, operated at a loss.

The exhibit is set up to show in the left hand column the name of the company, in the second column the general description of the business, the third column the location of the principal plant or plants of the company, and then in three successive columns, each with three sub-columns the total invested capital as at the end of each of the years 1936, 1937, and 1938, the net earnings before interest, which the rate of return, and the relationship of those earnings

before interest to the invested capital, which is the rate of return expressed in per cent.

In submitting this exhibit, I point out that there is no intent to compare the risk involved in any particular one of these undertakings with the risk involved in the business of defendants. The purpose is simply to show what rates of return were made by business in general and by successful business in the general area and region where these companies operate, or in markets where they would have had to compete for capital had it been financed in this period. That list covers the first three pages of the exhibit.

1054 This rate of return shown in the column under the caption "Rate of Return, percentage" represents the rate available for interest and dividends after all charges such as depreciation and other charges comparable to amortization and operating and maintenance costs, taxes, and things of that kind are paid. There are a large number of companies here and it is conceivable that one company or another company might keep its books in a way that would keep those factors out, but most of them do not. We have examined their statements and the net earnings before interest are supposed to be after all charges, cost of doing business, and accruals. Of course, the percentage figure would relate that to the capital investment, which is the sum of the capital of all kinds and the surplus, less net of depreciation reserves, where reserves are on the books. Net of depreciation reserves means just the capital involved in the business. The reason that it is net is because it gives you, as nearly as possible, the best index on the book figure that you can reach. That is the net sum of the capital on the liability side of the sheet and the surplus.

I took the particular three years shown in this exhibit instead of taking one year and making that the basis of the study because in the business life of a country there are cycles which affect all business, and to pick one year might very well give an improper index of the earning capacity of business as a whole. I think that is exemplified in the fact that the average rate of return for these 128 companies in 1936 was 9.3 per cent. In 1937 it was 8.37 per cent. Now we know that 1938 was a year of marked business recession and in that year the return was 4.37 per cent. The average for the three years on all companies—and this is a weighted average, in other words,

the capital is multiplied by the earnings, so to speak, and then divided into it—the average for the three years is 7.32 per cent. I just add the capital and earnings all up and then divide. I should have explained that each one of these average rates, when you come out at the end, may be either cast up from the mean or cast down from the mean. In this instance it is cast down very heavily, because there is one very large industry, the packing industry, which has not been particularly prosperous in recent years. That is a large capital industry and consequently if it fell below the middle it would tend to draw the whole average down. On page 3 of this exhibit you will notice that Armour & Company, with a capital of almost $300,000,000, had an average return of only 3.63 per cent during that period. That would tend to draw the whole average down.

The red figures on page 3 indicate losses for those particular companies in any of those years. Now if you were to use this 7.32% as a measure for regulatory purposes obviously you could not regulate to loss or to destruction. If you drop out the red companies and use the black companies you come to an average of 7.48 per cent. That only eliminates those companies which show a red return in the average column at the extreme right side. A pipe line company desirous of placing its securities would not find itself in competition with those twelve companies who operated at a loss. They would not offer any competition in financing. This is also true of those others in the lower portion of the final column beginning with the company which offers only .39 of 1 per cent as a return on its investment. In reality I think that these defendants if in search of capital would be in competition with the successful companies of the group. You could eliminate a large number of those companies, let us say those that are less successful than the average. They would not be strong competitors for capital at any one moment. If we eliminate all those who made returns of less than 7.32 per cent on the investment we have left companies with an investment of somewhat over $924,000,000 making a return of somewhat over $108,000,000. (Objection by Commission Counsel to above testimony overruled.) That includes those companies
1055 which in the final column made 7.32 or above as a return, and 108 related to 924 is 11.73 per cent. That is to say those companies which earned as a return the average or more for the whole group actually earned

11.73 per cent on their investments. There ars 128 companies in all shown on this list. Those companies which made a return greater than the average numbered more than one-third of the total number of companies and practically one-half of the capital involved.

Columbia Gas & Electric Corporation, on a consolidated basis, that is including the subsidiaries, has a gross revenue of approximately $100,000,000 per annum. Of that approximately two-thirds arises from natural gas operations and a little less than one-third from electric operations; the small balance is from incidental businesses. There are two or three natural gas subsidiaries with a few shares of stock outstanding. Outside of those there are only two natural gas companies that have issues of securities like bonds or preferred stocks in the hands of the public. These are two natural gas companies each of which has an issue which was originally $6,000,000 and now somewhat less in the hands of investors. Each one of these two companies has assets of approximately $100,000,000. We finance the capital requirements of our other natural gas interests through the holding company instead of issuing the securities directly on the gas properties. There is a reason for this. The financial history of the natural gas business is not particularly fortunate, and natural gas companies as a class, do not generally have high credit, and their securities in the past have not been popular and readily salable to the public. When we finance through the holding company we are able to finance on a better basis because we have substantial electric earnings in addition to the gas earnings.

I spoke of two natural gas issues. Those were issues of $6,000,000, the par value of serial notes sold in 1934. They were sold privately to the Metropolitan Life Insurance Company and to the Mutual Life Insurance Company in New York, each taking a part of each issue. One was a loan to the Ohio Fuel Gas Company, the assets of which on the balance sheet were in the neighborhood of $120,000,000 and which earned interest on its notes about 14 times. The other was notes of the United Fuel Gas Company with book assets of approximately $85,000,000, which earned its interest, at the time the notes were sold, 14 or 15 times. The earnings have since improved. When those notes were sold to the insurance companies, with one exception, a life insurance company in New York had never bought a natural gas bond. Those were the first natural gas bonds they

bought. They bought those notes in January, 1934, on a 5½ per cent basis and insisted that Columbia Gas & Electric Corporation guarantee them, in order to get behind the credit of the operating subsidiaries, the credit of the parent with its electric business. That is an indication of the difficulty there was in the past in selling natural gas bonds. Both these companies have distributing facilities. There are two advantages in having distributing facilities that immediately occur to me. When you have an asset there that may not go entirely out of use with the complete extraction of your natural gas, that is one; the other is you have control of your market for the sale of natural gas, which is of vital importance. Since the sale of the two issues of $6,000,000 each of natural gas bonds in the year 1934 there has been marked change in the situation. The life insurance companies which in the past several years have been the largest single class of security buyers, have been substantial buyers of natural gas bonds. Just after those particular sales another company sold some natural gas bonds to the life insurance companies privately,
1056 and the life insurance companies which were then seeking investments and had no natural gas bonds, proceeded to build up the natural gas sections of their portfolios and created a peculiar demand for the bonds of natural gas companies for the past four or five years when we have been in what we term an institutional market.

An institutional market is one in which the securities are sold to institutions rather than to private investors. Life insurance companies are the largest segment of the institutional market, and I might exemplify that by saying that unless you know in advance today that the large life insurance companies will buy an issue of this type, your sales problem becomes extremely difficult and almost impossible.

Coming back to the natural gas pipelines and production business for a few moments, we have classified this business as an extractive industry. It is a mining undertaking which is selling its assets to make earnings. Now not only is the natural gas business a mining undertaking at its production end, that is at its source of supply, but it is a regulated business at its distribution end in most instances, and it is therefore more risky than, for instance, a copper mine or gold mine, because not only have you the risk involved in the supply of any material that is under the ground, but you have a market at the other end the price of which is controlled in the first place, and which you

cannot stop serving in the second place. If a copper mine were forced to sell because of economic conditions at prices which would not yield a profit, all you would have to do is shut down and leave a watchman. A gas company cannot quit business, and that is a very real risk.

From my personal relationship with buyers of securities I know that they have considered natural gas pipeline and production bonds risky. It is borne out by the ratings that natural gas bonds are given by the various statistical services, and it is also finally confirmed by the prices at which they sell. We have made a great many studies into that subject to see how the bonds of natural gas pipeline companies have been rated with reference to other securities. I have a list of those bonds which we have considered in the making of that study or used in the chart which we have made as a result of that study. On page 4 of my exhibit, 147, we compare the yield on securities over a period from the beginning of the year 1929 to the end of the year 1938, the yield on 15 high grade municipal bonds as published by Standard Statistics, 40 high grade public utility bonds as published by Moody, and 40 high grade industrial bonds as published by Moody, with 9 natural gas bonds which we have made up ourselves. The 9 natural gas bonds included at the end of this period were Cities Service Gas Pipeline Company 6's at 1943, North Central Gas Company 5½'s at 1955, Macon Gas Company 4½'s at 1952, El Paso Natural Gas Company 4½'s at 1951, Kansas City Gas Company 6's at 1942, North Penn Gas Company 5½'s at 1957, Oklahoma Natural Gas Company 4½'s at 1951, Panhandle Eastern Pipeline Company 4's at 1952, and Southern California Gas Company 4½'s at 1961. That is a selection of natural gas bonds which represents about the best that the industry has to offer. This study was not made for the purposes of this case. It is a study that we use for our own comparative purposes constantly in comparing the prices of natural gas bonds and I think reflects very fairly the investing public's appraisal of the comparative risks of those different types of securities.

1057 We use this study in other rate cases and we use it in pricing bonds ourselves. Of course it is kept up to date.

Beginning in the year 1929 and following the black line you will note that the yield on the natural gas bonds was throughout the year from 5.80 to as high as 6.40 per cent. At the same time 40 high grade industrials were selling

to yield about 5.45 and 40 high grade utilities to yield about 5.25. The high grade municipals were down here at 4.25. Of course the primary reason for that is tax exemption. That is another factor that enters into their price. Now from the middle of 1931 to the end of 1934 these natural gas bonds sold at prices which at all times yielded more than 7 per cent. In other words, the senior securities of these natural gas companies, which are I believe entirely representative of the industry, the best that they had to offer, the most riskless security that they had to offer sold at the public's own price to yield the public more than 7 per cent on the investment. The comparison at the middle of 1934 is about 7.75 per cent for the natural gas bonds, about 5.25 per cent for the 40 utility bonds, about 4.45 per cent for the industrial bonds, and about 3.75 per cent for the municipal bonds. There are two very interesting points in this graph. You will note that at the beginning of the year 1933 the yields on utility bonds and yields on the industrial bonds cross, and from that time on the industrial bonds have sold on a more favorable basis than the utility bonds. You will also notice, so far as the natural gas bonds are concerned, beginning in the year 1934 there is a steady drawing together of the curves, indicating that the natural gas bonds sold on a more favorable basis in relation to the other bonds, and that I ascribe to the fact, to which I have just testified, that the large institutions who had never before been buyers of natural gas bonds stepped into the market and created for this period a peculiar demand for those securities.

The circumstance that early in the year 1933 the yields on the public utility bonds crossed the line of yields on the industrial bonds and became higher from that point forward through the year 1938 than the yields on industrial bonds is of significance. Of course I may be influenced by my interest and studies on this particular subject. I feel that it was just about that time, and just prior to that time, when the regulated rates of return of utility companies were very much reduced. In other words, we had been, generally speaking, in times of rate of return for utility companies of 7, 7½, 8 per cent, and so on—I mean electric companies, this group. Beginning about 1932 or 1933, there was a sharp cut in that as the result of a group of decisions which brought these returns down to 6½ or 6 per cent. Again I know from contact and relationship with professional investors like institutional buyers, that this

has been a cause of great concern to them. They had before them the example of the financing of the railroads operating on a legal rate of return fixed by law at 5½ per cent, and the result of that, and I think that is the strongest influencing factor right at that period. In other words, it is my view, from my knowledge of the subject, that the change in the year 1933 from a situation in which public utility securities had theretofore sold at a lower yield and at a higher price than industrial securities to a situation where they began to sell for a higher yield and a consequent lower price is due to the pressure on the rates. You translate that into rates of return, because the rate of return in itself, I think, is one of the most important factors. It is pressure to reduce the earnings of the
1058 property which is immediately reflected in a decline of their credit standing with the public. With very minor exceptions, almost all of the financing there since 1934 has been for refunding purposes. There have been some exceptions but very minor ones in relation to the whole. That indicates that there has been a retarding of the flow of new money into the industries whose securities have been negotiated as opposed to the conditions which obtained in prior years.

In its origin the natural gas industry was a by-product industry. The[re] was a period of extremely rapid development during and just prior to the war years, that is 1913 and 1914. The biggest gas years I think in the history of the industry occurred in 1917 and 1918. At that time the natural gas companies were largely private undertakings, owned by groups of men, usually men who were in the oil business, because it was a by-product of the oil business, and subsequently, when natural gas began to stand independently on its own feet, which was in the middle 20's, it was only then that you could get the public, other than the public who were interested in and intimate with the oil business, to put money in any large volume into the natural gas business. There were, of course, exceptions. I can remember for many years the only natural gas bonds that I ever heard of were the Kansas City Gas 6's. As far as I was concerned, dealing in the general market of securities, there were no others. There were a few others which were traded occasionally in Pittsburgh and Cleveland, but in big markets they were never heard of. People did not deal in natural gas bonds.

Of the 9 companies which I have used here in this chart

on page 4, seven are either solely distribution companies or have important distribution facilities. Two exceptions are the Cities Service Pipeline Company which is a transmission system and Panhandle Eastern Pipe Line Company which is essentially a producer and transmitter although it has small distribution facilities. There are only 7 of these companies which, at the end of 1938, we could get complete figures on, and the combined capital ratio of those 7 was 42 per cent bonds, 20 per cent preferred stock and 38 per cent common stock. I have stated that to be the nearest per cent. I have investigated the earnings in relation to the interest requirements of the interest-bearing securities of these seven companies. We found that using the composite picture of those seven companies, that their bond interest was earned three times, that their bond interest and preferred stock dividend requirements on an overall basis was earned twice. That indicates to me that the public's requirements for the ratios on natural gas securities are inclined to be more rigid than they are for some other types of securities, notably electric securities. I have not made a specific study, but speaking as a generality, if a sound and successful electric company earned all its interest charges twice, or a little better than twice it has a pretty good credit. If it earns its interest charges and preferred dividends overall 1.6 or 1.7 times the preferred stock I think would sell at good prices. Now, I have not made a specific study of that. Those are judgment figures just from experience, in dealing with electric utility issues. It is quite common, for example, in dealing with electric company mortgages, to put a qualification in that bonds may be issued for 66 per cent of the cost of new property, provided that all interest is earned twice. I have never been able to get that kind of a provision in a natural gas mortgage. Had those earnings been less than three times the earnings on the bond issues I think the bonds would have sold at lower prices and at higher
1059 yields. That would have been true also with reference to the preferred stock. Based on my knowledge of the natural gas business and my experience in the handling of securities of all kinds, including those of natural gas companies, I doubt if that sort of return, 3 times the interest on the bonded indebtedness, amounting to an average of 42 per cent of the whole capital, and twice the combined interest on the bonds and preferred stock aggregating 62 per cent, would have been an adequate return to

sell the common stock at par, had it been necessary to finance the amount that went into the common stock also. We are thinking here in terms of bonds that are selling in the market all the time in small lots, and preferred stock selling in small lots, 5, 10, 20, or what have you. Now those securities are entirely different than securities involved when you go out and sell a new issue. Even with your own bonds, if you have a company and its bonds are selling, for example, at 100, and you issue additional bonds under the identical mortgage for added property which will add to earnings, you do not get the same price as for the bonds that are selling in the market. You get less. So what I mean by talking about minima is I am exaggerating here against new financing. I do not think you can necessarily go out and sell bonds at par on a 4½ per cent basis and sell preferred stock on a 6 per cent basis and then sell the common stock at such ratios as I have discussed. I do not think it would happen that way.

The natural gas business being an extractive industry, the buyers, whether they be bankers or institutions, always want to be sure that there is a margin of safety beyond the maturity of their obligation in the available supply of gas. For example, if you can satisfy them that you have a 25-year supply of gas they will not lend you money for 25 years; they will lend you money perhaps for 20. As you come down, if you can satisfy them you have a 15-year supply of gas they might, if they are extremely hungry, lend you money for 12 years, but usually with a very heavy sinking fund. A skillful and careful buyer would only lend you money for 10 years. By "heavy sinking fund" I mean it is quite customary in natural gas bond issues to have a 100 per cent sinking fund. If you will look again at this chart, that fact distorts the yield on natural gas bonds, as shown by this curve downward. By that I mean the Panhandle Eastern Pipe Line Company has an issue of bonds outstanding which will mature in 1952, so that the yield as used in this is taken to 1952. As a matter of fact, those bonds have a 100 per cent sinking fund so that their maturity is almost half way to 1952, and if this were taken into account the yield would be much higher. In other words, the money is being accumulated against the bonds in what is called a sinking fund for the purpose of protecting the owner against having to look to the resources as of the time the bonds mature.

Based on my knowledge acquired in dealing with the marketing of securities of all kinds and my knowledge of the natural gas business as an officer of the Columbia Gas & Electric Company, handling its securities as its vice president in charge of financial problems and in the light of all my knowledge concerning the attitude of the public towards the hazards and risks involved in the business of a natural gas pipeline producing company, I have an opinion as to what is a necessary and required return for a natural gas pipeline and producing company. I am familiar in a general way with the two companies involved in this proceeding. I know where their properties are and where their source of supply is. I know
1060 of course about the Panhandle of Texas gas field, its extent and its distance from Chicago, where these pipelines find most of their market. I have an opinion as to the necessary rate of return or the required rate of return to which these companies are entitled. I prefer, if I may, to answer that question by stating what I consider the minimum rate of return. I do not think that the Natural Gas Pipeline Company of America can continue to exist and finance and maintain its credit and raise the necessary money in the future for the additions it is going to have to have to do its business on a return of less than 8 per cent. Now, I am being very careful not to testify that that is a fair return, because in this type of extractive industry, after all the study that we have done, I am convinced that it is not. I think this type of industry is entitled to and should have for the future benefit of the investors in the company and for assurance of continuity of supply for the customers, a more adequate return on the necessary capital. In referring to rate of return I am relating the earnings to the rate base. I am not interested in the amount of the rate base, the dollars involved, or anything like that. It is simply a percentage relationship, the rate base to the amount that has to be paid to raise that capital.

I am familiar with the use of the term sinking fund as I have used that expression here. I am familiar with the practice among regulated concerns and regulating bodies of setting up and requiring from the standpoint of the regulating body, that reserves be set up for the return of the capital, either to offset depreciation as in the case of a utility which is continuing on, or for the purpose

of returning capital in the case of a project like a natural gas producing company, which has a terminable life, so as to distribute the amount evenly by annual installments over the prospective life of the project, or for the life of the physical property as in the case of a utility. There are various methods of creating those funds. You refer to either a straight line method where a given sum is periodically deposited, designed to accumulate a final fund, or a sinking fund method where the amount is periodically deposited, which with interest and with interest on interest, creates a sum at a certain year. The purpose of an amortization fund, particularly in an extractive industry, is to return the capital to the investor, get his money back for him. If you wait until the last year, the business is over, there is no more, and to protect him you have to assure him by annual or periodic payments throughout the life of the business. That, incidentally, distributes the burden of returning the capital among all of the companies' customers from now until the project has reached the end of its life. Now if that fund is to be accumulated by the straight line method it is a simple matter of dividing the total amount to be returned by the number of years during which it must be accumulated. If it is to be accumulated by sinking fund accrual, you would set up a lesser annual sum than you would on a straight line basis, and then you would fix a rate of interest which you are sure you can get on that sum for the whole period for the life of the fund, and at the end of each period you reinvest the return on the fund itself, and do that each time, and for a small annual accretion therefore you build up the larger sum at the end. In other words, you make a smaller annual deposit but by putting your annual deposit to work, you do not have to put up so much out of the property itself. To state it differently, the amounts set up under the sinking fund are such amounts as, together with the interest and the interest on the interest, will amount to the total sum to be returned at the end of the project's life.

1061 From the standpoint of the investor and the standpoint of the company which owes the investor the duty to return that capital by the end of the project's life, an interest rate which is so low that you can be absolutely sure of getting it must be used in accumulating that fund by the sinking fund method. The only way to

build up a sinking fund is to put a rate on it that you can be just as certain as it is humanly possible to be certain will never be broken. I believe that the biggest amortizers of funds like this are the life insurance companies. Life insurance companies use in New York 3 per cent, but that 3 per cent is not quite a true figure, because they are using for their mortality tables the 1885 American tables, and they have shortened the present span of life and therefore very much diminished the risk. As a practical matter I would not want to use 3 per cent, because I do not believe I could feel sure, over 15 or 20 years, of getting 3 per cent on every investment. I would much prefer and I would at this moment be more apt to pick a rate of 2 per cent which, I think, is a logical rate under existing conditions. That is a judgment figure, but it is a figure I would pick today if I had to accumulate a certain fund, to be sure of doing it. I would not go out and buy stocks with this kind of fund if you get 7 or 8 or 10 per cent return on stocks for the risk of losing your principal. That is why you get it. According to the previous testimony, I say you could not do that. You have to find the nearest to a riskless investment that you can find for a sinking fund or amortization fund. The company accumulating such a fund must avoid every possible risk, from the practical standpoint, and mathematically it is essential that they avoid risk and pick a low enough rate so that the very functioning of the interest on which they are relying to accumulate the fund can operate.

Cross-Examination by Mr. Slaff.

As to whether or not I would compound that interest annually, semi-annually, or quarter-annually, in figuring the 2% ordinarily you can compound semi-annually, simply because the fund is usually invested in bonds, and most bonds pay their coupons semi-annually.

Prior to my coming with Columbia and subsidiary companies I never testified in a rate case. Since that time I have appeared in rate proceedings before various commissions, I appeared before the Illinois Commerce Commission in 1932, testifying for another company. It was, I think, the case of the Central Illinois Light, having to do with the gas rate at Springfield. I have appeared before the Ohio Commission in cases involving the Ohio

Fuel Gas Company, the United States Fuel Gas Company, Cincinnati Gas & Electric Company, as far as rates are concerned, and I have appeared before that commission frequently for various companies in connection with matters of financing. I have appeared before the Pennsylvania Commission in a rate case for the Union Heat & Light Company, I should say in about 1933 or 1934. I have appeared before the West Virginia Commission in rate cases involving the Natural Gas Company of West Virginia, the Cumberland and Allegheny Gas Company, and in matters of finance involving the United Fuel Gas Company. I appeared, I think by deposition, before the Virginia Commission in ma ers, I think, involving service company contracts and financing. I am not positive whether that was a deposition or simply an interrogation. I made several appearances before the Ohio Commission in the Ohio Fuel Gas cases. I should say I appeared before that Commission in 1933 and 1934, and again
1062 in 1937. These proceedings involved the same municipality but they were different cases. All involved gas rates. In each one of those Columbus cases the United Fuel is brought in as the supplying company, and I appeared for it in those cases. I appeared in no other cases involving the United Fuel before the Ohio Commission, so far as I remember.

The Cincinnati Gas & Electric Company case was a gas rate case which was settled. It was tried, I believe, in 1934 and I appeared for it in that case. Now that, of course, would also involve an appearance for the United Fuel. I appeared as a voluntary witness in the Union Heat & Light case before the Pennsylvania Commission in 1933 or 1934. It involved gas rates. The Natural Gas Company of West Virginia case was a gas case, and my appearance was in the year 1932. The municipality involved was the city of Wheeling. The Cumberland and Allegheny Gas Company case involved gas rates. I am sorry I do not remember the name of the town that is involved in that case. That was in 1937 or 1938, the latter year I think. I believe I testified on rate of return for the Cincinnati Gas & Electric Company in an electric case in 1933, which case in turn was settled. That would be before the Ohio Commission. In Ohio you are required to submit your testimony. I do not remember whether my testimony was just submitted or whether

it was submitted and I appeared. In either case the testimony is there. The case was settled and withdrawn.

Cross-Examination by Mr. Booth.

I have stated that I believe the term rate of return has two specific aspects, namely, pure interest and risk premium. That was the conception of rate of return which I had when I expressed my opinion in response to the question of counsel for defendants. I said in direct testimony that a good measure of pure interest at the present time was the rate on the bonds held by all New York savings banks, which in 1938 was 2.87, and I should think that between 2¾ and 3 per cent of the eight per cent in that range would be pure interest and the balance risk premium. While that is one element in my conclusion as to an overall rate of return, I did not specifically allocate 2¾ or 3 per cent as the factor of pure interest and the remainder to risk premium. So that there may be no misunderstanding, may I say that if at that moment the pure interest rate had been 2½ instead of, say, 2¾, I might still have arrived at 8 per cent as the minimum return. The principal factors in my mind in arriving at 8 per cent were, first, the rate necessary to compete with other industries for capital, which I arrived at by the first part of the exhibit put in this morning; second, I arrived at that rate by calculation and experience as to the amount of return rate that this company would need to be able to finance in competition with other companies, knowing the terms on which other companies financed. I divided that into pure interest and risk premium because, this being a peculiarly risky business, risk premium is a very important factor in arriving at the rate of return, but I wouldn't necessarily have to divide them three and five, although those are approximately the figures that I did have in mind in coming to that conclusion—2¾ and 5¼, roughly. That is my own personal judgment of it. I have stated in my testimony that the interest rate in determining the amount of interest that should be applied computed in connection with the amortization fund should, in my opinion, be 2 per cent. That is an experience figure, and, as I said, the largest amortizers of large funds are the life insurance companies who have great experience in the amortization of
1063 risks, where they actually amortize the policy on a man's life. They use 3 per cent, but I know that

there are factors of safety in there that if I was setting up a sinking fund to retire a given amount of money, I wouldn't have, and I reduced that to the amount which I have felt over a period of years I could be assured of getting from outside securities that I could buy, allowing for a slight factor of safety there. If I may give you a perfect example, in that fund you would have diversity. If you went through a period such as we have been in in the past five years, I might well buy underlying bonds of the Cincinnati Gas & Electric Company on a 2.9 basis, and I might well buy underlying bonds of the New York Edison Company on a 3¼ basis, but I would also have to have some Government bonds in there as a matter of security, and those would be on a less than 1 or 1¼ per cent basis. Now when you think of the kind of fund you would have to have, you could conservatively make an investment that you could be sure of yielding you 2 per cent, because it must yield you 2 per cent. The investment must be on as risk-free a basis as you can find. That would be the purpose in investing that fund. If I invested it in securities of the class just described, namely, a combination of Government, New York Edison and Cincinnati Gas & Electric, and perhaps some municipal bonds or telephone bonds of A.T.&T. subsidiaries, and securities of that class, I obviously would not have a risk-free investment, but that would be as risk-free as I could get. Some of those bonds in the next 20-year period may well default. There is no such security as a risk-free security. The Government securities are as nearly risk-free as you can get.

Questions by the Examiner.

I observed that the life insurance companies use 3 per cent, because that group of institutions is the most widely experienced group in amortization They use that figure. I think I explained in my direct testimony and again just now that I know the life insurance companies have certain safety factors that I wouldn't have. Therefore, I must take a lower rate. I am governed by the fact that, as just stated, I would have to have some Government bonds. That would tend to draw the rate down. I might have some telephone bonds which would push the rate up, but I would be afraid to average, to attempt to average more than 2 per cent on a fund the whole purpose of which was never

to lose one payment of interest or one payment of principal.

Cross-Examination by Mr. Booth Resumed.

I had the contracts between defendants and Chicago District Pipeline Company available for study and did study them when I was preparing for this case some time ago. That was 18 months ago, however. I think I might be able to answer a specific question as I am generally familiar with that contract. I read those contracts to be familiar with them but I didn't attach to any specific part of the contract a specific risk and say this would add one-eighth of one per cent, or anything like that. To be perfectly specific in my answer, there isn't any one particular provision to which I attach special significance in arriving at my conclusion as to the fair rate of return for defendants. The big risk factor in this particular business is that it contracts for its retail market and doesn't control it itself, and putting it in a conversational way, it is consequently at the mercy of the seller of gas who is only interested in this company as a means of getting that material. It
1064 is in a very weak position where it can't set up a type of rate, for example, retail rate, which might encourage the type of business which this company might need at a given time. That is a great risk. What I mean to say is that the fact that the market was a contract market was an important element of risk to this company. I don't think that the company is in a very weak position, but this situation presents an important element of risk. I concluded that the business would be less risky if defendants owned the distribution. I am not trying to avoid your question; I am trying to answer it specifically. It isn't a matter of a contract or a provision in a contract. It is a fact. These companies do not control their market and that adds to the risk of their business. I repeat that there is no specific provision in the arrangements between defendants and the Chicago District Company to which I attach special significance in determining the rate of return for defendants. It is the fact that the market and the supply are divorced that bothers me. I don't care how they are divorced or what the arrangements of sale is. It is the basic fact. I don't have to look beyond that into the details of the arrangements; they might be good or bad, and these, as I remember them, didn't bother me at all. There was nothing in them that upset me. What does

bother me is that the man who produces his gas and carries it 900 miles can't make the terms of his sales at the other end, subject only to regulation.

I did not say that the 8 per cent would be a reasonable or fair rate of return at this time. I was very careful to testify that it was a minimum rate. A minimum rate is the least, the smallest rate that I think a company could live on. I have no doubt that you will look at testimony in recent cases, or other cases, and I have testified often to an 8 per cent rate of return to gas companies in different kinds of businesses, each time testifying that it was a minimum rate. Now I don't think the risks in those different types of companies are identical, and I don't think that the fair rate for this company might necessarily be 8 per cent. I do think that it could get by on it; if you considered the risks and weighed them very carefully you arrive each time at a rate that is so high that under regulation there just isn't any use proposing it. An 8 per cent return is the minimum on which these companies can live, in my opinion.

Further Cross-Examination by Mr. Slaff.

I am not concerned with the rate base; that is the business of other witnesses, but I mean 8 per cent on the allowed rate base. If you allow X as the rate base and that rate base is extremely low in proportion to cost or to reproduction cost new, or to some other yardstick that you would apply, it of course would have the same effect as an unduly low rate of return. If you allow a generous rate base and a rate base which I would consider would include elements that many regulatory bodies do not consider now, then I think that you should allow 8 per cent on that rate base.

Further Cross-Examination by Mr. Booth.

As to the peculiar risks of the business of defendants, in the first place, I have stated several times on direct that it is an extractive industry and there is the risk of exhaustion of gas perhaps prior to the estimates of the geologists. I said the risk that it might be exhausted prior to the estimates of the geologists. I have a book of some
500 natural gas circulars published between 1920 and
1065 1930, and a single reading of that book and an estimate of gas supplies will convince you that the risk of

exhaustion of supplies prior to the geologists' estimates is something that is foremost in the minds of all investors. I have made no studies, nor am I qualified to make any studies, with respect to the life of the Panhandle field, or to state that it will, in my judgment, expire earlier than the date to which witnesses have testified. But that isn't the question. The question is whether there is a risk that it may expire earlier, and I am qualified to state that there is a very strong risk that it may—that field or any other gas field. I consider that of some importance in arriving at my conclusion as to the 8 per cent fair rate of return for these companies. There are other risks. I consider the risk, for example, of this property being reduced in value and use by a possible discovery of gas near the markets. You may have been familiar with the fact that there has been some drilling in southern Illinois and some gas found there which might affect the value of this property adversely if developed into a big discovery of gas. There are some mechanical risks that we all face in the long distance transmission of gas. It is almost impossible not to have occasional blow-ups, occasional failure of machinery, accidents that occur, and the chance is multiplied in a sense by the length of the line. I don't know that there is a direct relationship but the risk increases as the line becomes longer.

I have already spoken about the contract market. Now from the standpoint of finance, and without being unnecessarily combative on the stand, there is a risk in the minds of investors now that arises from the fact that the status of regulation at the moment is not fixed. Investors don't know what they are facing from a regulatory standpoint and that risk assumes great importance in their minds. You seldom deal with a large investor who doesn't bring up this point that I made this morning of the reducing rate of return which they are convinced will put the utility companies out of business. That is a risk. Further reductions will have a bad effect on the credit of these companies, this company and all other companies.

You ask whether there might be or is a tendency for regulatory bodies to use as a rate base the investment or prudent investment or original cost in the properties, so as to assure the investor always a return upon the investment that has been made in the property, might be a counterbalancing factor entering into the rate of return. I think at the expense of lengthening the record, I will illus-

trate what I mean. In a property with which I am familiar we have a building which we purchased in 1921 or 1922 from the telephone company. For that building we paid approximately $200,000, $5,000 a front foot. Immediately across the street within a week a building sold for $8,000 a front foot. We made a good buy. But that building cost the telephone company, twenty-one years earlier, when it was on the outskirts of the city, $15,000. If you follow the theory of original cost, that is original cost to the first user who dedicates the property to public service, you see what they would do to part of your rate base. That is particularly true in a natural gas company where a utility might buy acreage and develop it and if you buy it from them you don't get the advantage of that cost to you in your rate base. That is a very real risk. If the theory of original cost were to be applied to gas producing lands it might have a serious effect on the future of natural gas companies. The only state in which prudent investment is used is in Massachusetts, and I think that if prudent investment were carried out as it is there, it wouldn't
1066 have a very great effect, but there is a wide range of interpretation of the prudent investment theory. I do not consider it to be a counter-balancing factor.

There are two risks that apply particularly to this company, in increasing costs. The first risk of increasing costs is the increasing costs that might come from a period of inflation and would affect any utility company or any company with fixed rates, where the costs increase more rapidly than the price of the product. That applies to all companies. But there is a particular risk that applies to defendants which is the cost resulting from a diminishing supply of gas. If, for example, the geologists erred three years in their estimates of the gas supply available, costs would increase more rapidly toward the end of the period because it is more expensive to get gas out of a field at a low pressure, and that is a risk in this business. If they erred in the sense of arriving at a conclusion, namely that the life of the field would be somewhat longer than they actually testified to, that would be recompensed for, of course. Now there is another risk in the natural gas business that is peculiar to the natural gas companies, and that is that in recent years, especially since 1929, there has been a sharp contraction in the individual use of gas by residential consumers. I don't remember the figures for the country as a whole. In our own system with over

a million customers, the per customer consumption has dropped from about 78,000 feet per annum to about 58,000 feet per annum. The residential load, of course, is the most valuable part of the load, and a drop in that is disproportionate in loss of revenue to a drop in the industrial load. That apparently is caused by a change in the mode of life of people. Also a factor in that is the greatly improved appliances of which we are very glad. That is a risk. Until we know the borders of that decline in the gas business it is a very real risk for any investor, and it is a particular risk for this company with its contractual market, because if they find their domestic load falling off, they can't immediately take steps to correct it which they could if they owned the market, and the purchaser of the gas who buys at a price hasn't the same interest in correcting that as the producer of the gas. He is in a little different position.

A very extensive investigation has been made by the American Gas Association in the communities where natural gas is sold to determine whether there has been a decline in the use of gas in those communities. That investigation was headed by my immediate assistant and of course I am familiar with it and have discussed it with him several times. I am familiar with the situation of this company and many others in this country. I haven't the faintest idea as to what the drop per customer has been in the communities served by defendants. I believe there has been a drop. I say that the gas industry as a whole has suffered a sharp drop in the domestic consumption of gas. In a given situation a company might not have suffered such a drop. Supposing this company hasn't, the fact that the industry is suffering that loss is a risk to this company because if it hasn't felt it yet it may feel it tomorrow and the investor has to consider that. I don't know, but I am perfectly certain that these companies have suffered a drop in customer consumption. I am not interested from the standpoint of this particular company, in whether or not it has had that drop yet. It is a characteristic of the industry. I can't quite truthfully say that I have made no special study of the market of this particular company or the companies which distribute its gas. Of course I studied them quite thoroughly when I started this investigation about two years ago. I completed it about 18 months ago. I haven't done any concentrated work on the subject during the last 18 months except to review the results. The

conclusion I testified to is the same as 18 months ago.

1067 There are other risks I would like to speak of. One is the rising cost of regulation. I have already spoken of one phase of it and another is rising taxes, which we are all familiar with. The natural gas business is unlike any utility business that I know of from a competitive standpoint, because it is in direct competition with other commodities. I would exemplify that by saying it would be inconceivable to any of us here to remove these lights and substitute candles and kerosene oil lamps, but we are perfectly familiar with the fact that people shift in and out from gas furnaces and gas heaters to coal; kerosene oil is widely used as a medium for cooking and that is in competition with gas. There is a further competitive element, and that is even under the new Natural Gas Act there is direct competition with other gas companies, and where you simply supply a market and you haven't the distribution system, you only have to lay a pipe to the edge of that market, so to speak; you don't have to replace a distribution system. It isn't so difficult for a man to walk in and get a certificate of convenience and necessity and plunk a line into your market. That is a serious risk. You don't walk in and get a certificate of convenience and necessity by paying a dollar fee, of course, but you are familiar with the wording of the law, and I think there is one recent decision within two months that exemplifies that very well. I am talking about Section 3 of the Natural Gas Act of 1935. The Lea Bill. That is the section of the act which enjoins the Federal Power Commission to grant certificates of convenience and necessity to those offering lower prices.

These are the major factors that I have considered. I don't think there are others that I have given consideration to. In the direct testimony I have very carefully stated it wasn't my purpose in putting in this exhibit to make a direct comparison of risk between any one company here and this company, and then amplified that to say that, supposing a man has $128,000—there are 128 companies here—and invested $1,000 in each one of those, and had the choice of doing that or investing $128,000 in the pipeline company, obviously he would run the less risk by investing in the 128 companies. That is a little impractical, he wouldn't do that. I don't think I am in position to compare any one company with the risks of these companies; but the fact is that these companies and a large group of

them, the group risk being comparable to the risks in these companies, afford investments at higher rates of return than the 8 per cent which I consider the minimum for these companies. If we take a group of them the diversity factor reduces the risk in any one company. It isn't my purpose in this exhibit to show that individually the risks of any company listed there are comparable with the business of defendant companies. The businesses of the companies listed are not comparable with those of defendants but the risk of these companies as a group is comparable to the risks of these defendants. Some may have comparable risks, but I haven't analyzed them from that standpoint, and I am not in a position to testify as to that point. I am not interested in it from that standpoint. I haven't analyzed the risks of any of these particular companies.

The lists of the companies which make up Moody's Index for 40 high-grade industrials and 40 high-grade public utilities and the Standard Statistics Index for 15 high-grade municipals, shown on page 4 of my exhibit, are changing lists. I would have to send that list to you.

1068 I would have to send you a list for every week since 1929. It is all published in the front of the manuals, but I can have it typed for you if you wish. That will involve my supplying ten lists, each list to embrace about 95 companies.

I am not familiar with the amount of new money, if any, that is needed by defendants now or in the future. I don't know that they need any.

Further Cross-Examination by Mr. Slaff.

The figures for invested capital and net earnings before interest shown on my Exhibit 147 stated at the sum of $238,263,948 of invested capital for Sears, Roebuck & Company, we took from the balance sheet of that company as published in the manuals. It was either Moody's or Poor's manual. They are all the same. And we added on the liability side all of the outstanding stock, all of the debt, if any—Sears, Roebuck hadn't any—plus the surplus. Now that is just what this is. The slight increase you see as you go along there, I think, is just added surplus from year to year. By debt I do not mean long term debt only. There are instances when the companies have short term debt that is in a sense permanent capital. In these periods there are very few because this is not a borrowing period; and

where we might have missed one, it wouldn't make a bit of difference. For instance, if there were under current liabilities, a maturing bond issue, we would include that as capital, but it is an effort to get the total invested capital in the business, whether arising through the sale of securities or through surplus.

We may have used annual reports in a few instances, but usually we use the manuals just because it is easier. The reserves are net. In other words, we don't add in the depreciation reserve on the books as a part of the capital. The net earnings before interest for which this company shows a figure of $31,088,939 is the gross income on the income account—the gross corporate income. The same method was pursued for all companies.

Redirect Examination by Mr. Morgan.

By gross income I mean the income that is left after depreciation and operation and maintenance and all taxes and charges of that character. That is income available for interest.

Questions by the Examiner.

I cannot recall exactly the rate of return to which I testified as proper in the various hearings at which I have appeared. Usually I testified, as I have testified this morning, to a minimum rate of return. I don't think it has always been 8 per cent. In the case of some distribution companies it might have been lower, but frankly the more I have studied it the more convinced I am that industry can't go on at as low a rate. Naturally, testifying as a witness for the companies I don't want to make requests I realize in the light of existing regulation are out of reason. I think it will not work. I think we are going to pay the penalty of regulation.

I did know the sinking fund provisions for the outstanding bonds of defendants. As I remember the sinking
1069 Fund provisions, the bonds are cancelled and killed as the sinking fund is accrued, so there would be no problem of reinvesting the fund. On these nine natural gas companies for which I have an overall figure that 42 per cent of the capital was in bonds, 20 per cent preferred and 38 per cent common, I think I can get a breakdown of the seven companies of the nine that enter into those figures.

I think I read into the record this morning the interest rate on the bonds of those seven companies. For instance, starting with Cities Service Gas Pipeline Company 6's, 6 per cent is the interest rate. North Central is 5½.

I can give you the other bonds which entered into the natural gas bond yield curve if you would like to have them. That is the table headed "Index of Natural Gas Bond Yields." There are five columns; lefthand column Poors Rating; next, Bonds Included in Index since January 1, 1929; next, Due Date Interest, next, "Date In," and next "Date Out." The table follows:

INDEX OF NATURAL GAS BOND YIELDS

Poor's Rating	Bonds included in Index since January 1, 1929		In	Out
B**	Cities Service Gas Pipe Line Company	6/43	1-29	12-38
B*	Texas Cities Gas Company	5/48	1-29	2-38
B**	Dallas Gas Company	6/41	1-29	9-38
—	El Paso Natural Gas Company	6-1/2/43	1-29	4-36
A	Kansas City Gas Company	6/42	1-29	
—	Lone Star Gas Company	5/42	1-29	10-37
A	North Penn Gas Company	5-1/2/57	1-29	
—	Oklahoma Natural Gas Company	6/46	1-29	7-36
—	Southern California Gas Company	5/57	1-29	3-31
A**	Southern California Gas Company	4-1/2/61	4-31	
B**	El Paso Natural Gas Company	4-1/2/51	5-36	12-38
B**	Oklahoma Natural Gas Company	4-1/2/51	8-36	
B**	Panhandle Eastern Pipe Line Co.	4/52	11-37	
B*	North Central Gas Company	5-1/2/55	3-38	
B**	Macon Gas Company	4-1/2/52	10-38	
B*	New Mexico Gas Company	5/51	1-39	
A	Arkansas-Louisiana Gas Company	4/51	1-39	

A** Very high grade investment bonds.
A Investment bonds believed to be reasonably safe.
B** Obligations which possess good security, but which need constant watching.
B* Obligations wherein the speculative element is present. Not suitable for trust funds.
All groups but B* are suitable for bank investment.

(EXHIBIT 147 was offered and received in evidence over objections of counsel for each of the two Commissions who were granted exceptions. EXHIBIT 139 was received in evidence over the objection of counsel for each of the Commissions to whom the Examiner granted exceptions. EXHIBIT 140 was received in evidence over the objection of counsel for each of the Commissions to whom the Examiner allowed exceptions.)

1070 JOHN A. COOKE, a witness for defendants, testified:

(October 2, 1939.)

Direct Examination by Mr. Morgan.

My name is John A. Cooke. I live at Evanston, Illinois. My office address is on La Salle Street, Chicago. I am a Certified Public Accountant. I am a partner in the firm of Peat, Marwick, Mitchell & Company, and we practice under the term "Accountants and Auditors." I have been a partner in that firm since the end of 1930. I went with this firm in 1920 but was admitted to partnership in 1930.

Prior to going with this firm I received my accounting training in England and was articled with a firm in Manchester, England, for five years. I received a degree for accounting in England.

Our firm is equipped to handle all types of professional service which are considered to come within this profession. Our work includes generally: auditing examination for registration of securities with the S. E. C.; Federal income tax work; returns and investigation work; industrial accounting; and systematizing the accounting records of companies. We also go into specialized lines, including banking examinations, brokerage examinations, and other activities of that kind. We cover the whole field of accounting service. We have twenty-eight offices in the United States geographically spread throughout the country, with headquarters and executive offices in New York. I am one of three partners residing in Chicago.

You have asked me to assume for the purpose of the observations I shall make hereafter the following facts: that defendants have a maximum life of 16 years; that the proper rate base on which they are entitled to earn, if they be subjected to regulation under the Natural Gas Act, is $75,000,000; that a proper annual rate of return is 8% of that rate base; that in order to distribute the burden of returning to the investors the capital or the amount of the rate base a fund is to be set up in equal annual installments over the period of 16 years; that these companies have bonds outstanding which bear 6% interest; that during the next 16 years amounts aggregating substan-

tially $10,000,000 will be required for the purpose of additional property as opposed to replacing property for use in the operations of defendants; that 1.35% is the rate of interest which would be reeeived by an investor in Government bonds, the most nearly risk-free of any securities available for the investment of a trust fund; that this fund of $75,000,000 is to be returned to the investors who now own the securities of the company at the end of 16 years and that provision is to be made distributing the burden of returning that capital among all those who purchase gas during that period of 16 years by setting up equal annual installments or installments accrued as a reserve for the return of the capital. (Objection by Counsel for the two Commissions overruled.)

Based on those assumptions, this $75,000,000 can be accumulated through a sinking fund. It could be accrued, of course, by dividing the amount by 16 and setting up 1/16 of $75,000,000 every year. However, inasmuch as money held for any length of time can be put out at some rate of return, it would be helpful to the fund to use the sinking fund means and accumulate the income which would arise from the investment of funds placed either with a trustee or held by the company itself for some future purpose.

1071

A sinking fund, generally speaking, is a fund which is set aside outside of the control of the company for a specific purpose. The money is turned over at fixed times, maybe annually or semi-annually or over some other period, and divorced entirely from the company's control and operation, so that the money once placed in the hands of the trustee is then available to that extent to repay the sum ultimately to be accumulated in that fund.

In this particular case, having assumed $75,000,000 to be returned, a fund would have to be provided over a period of 16 years, which, by annual sums placed in it, would accrue in one of two ways, either of itself to $75,000,000, or with the addition of interest earned to $75,000,000 at the end of that period. If it accrues itself to that sum, the method would be what is commonly known as a straight line accrual. If the sinking fund method is used, the interest to be added to the annual installments must come from outside the company's activities. I make that statement for the reason that the company, as you have assumed, is entitled to a return of earnings. Then the

earnings must of themselves go into the direction to which they are intended to apply, namely to the security holders. Therefore, if any rate fixed—I am now speaking of rate of income, of fixing the earnings of the company—is such that it only allows the amount which is required or permitted under the rate rulings to return a sum of money to the security holders plus an amount which is determined under the ruling for the amount to be paid into the sinking fund each year, then there is no margin over and above that to help accumulate in the sinking fund any sum beyond that which is placed in as principal rather than interest.

If the money which is placed into the sinking fund is invested outside, then the activities of others working with that money return, presuming there is no risk, an earning to the fund which does not in any way affect the company's operations, but in that case the outside money helps to build up the amount to be accumulated. The interest must come from the outside, however, if it is to be of any help in the sinking fund accumulation.

If there are bonds and stock ownership equities which represent this value of $75,000,000, this 8% per annum on the rate base amounts to $6,000,000. That amount is available as a return on the assumed value of the property and should go to the security holders, whether they be of one kind or another. It goes as far as is needed as interest, and the balance will be paid as dividends. The amount available for dividends depends upon the amount of interest that has to be paid on outstanding interest-bearing obligations. If there were no bonds, then the entire 8% would go to the stockholders as dividends. If the outstanding bonds assumed are retired as time goes on, any retirement of bonds increases the amount in dollars and cents available to the stockholders. This $6,000,000, which represents the accrual resulting from applying the rate of return to the rate base each year, is a fund that remains constant and belongs to the interest-bearing securities and to the stockholders as dividends in such amounts respectively as the amount of interest and amount remaining for dividends may happen to be at any given period during the continuance of operations.

1072 I have already said that the interest must come from without. It is immaterial what rate you use as far as the source from which that income must come.

If you could get 6% from outside investments, safe investments, so that the fund would not be impaired at the end, then I could have no objection to using 6% as the accumulation, regardless of where it came from. However, to go further, I say and maintain that it must come from without because, on the figures first assumed, the $6,000,000 belongs to the security holders as earnings year by year without any detraction therefrom.

On that assumption any saving, so-called, by the purchase of the company's own bonds merely alters the relation between interest and dividends in the 8%, and since a lesser amount must be paid for interest, a greater amount then is available for dividends to the stockholders. If you attempt to build up the sinking fund with the 6% obtained through the so-called savings on the bonds you have bought, you then and to that extent divert income permitted under the assumed 8% on $75,000,000. You divert that income to a capital use, and it is not then available for an earnings use. In other words, if the saving in interest be added to the amortization accrual, that saving is at the expense of the equity holders. You can not spend it and have it. As you have two figures to work for and you only have a certain amount allowable, it can be used only one way or the other, and if you use it as the compound interest feature of the fund, or pay it into the fund without any recovery in the rate set, then it decreases the amount available for the stockholders as dividends.

On the assumption of the figures already given, $75,000,000 accumulated on a sinking fund requirement, computed on a 6% compound interest basis, would in approximate figures require two million nine hundred some-odd thousand dollars per year to be paid into the fund for sixteen years. That money is compounded at 6%, and we must assume further in that compounding that you can retain the 6% investment and keep on paying interest with such bonds outstanding and that you can use the interest to reinvest in bonds for the full amount of the $75,000,000. If there are not $75,000,000 worth of bonds, you cannot follow that plan by the 6% investment in the company's own bonds; but leaving that for consideration later, let us presume there are $75,000,000 worth of bonds in this case. At the end of the first year the payment would be $2,825,000 approximately. At the end of the

second year you would pay into that fund $2,925,000 in cash plus the interest on the $2,925,000 worth of bonds which presumably had been acquired. That, on a 6% interest basis, is pretty close to $170,000 interest.

I do not propose to follow that through, since these figures can be checked by any method of calculus, but at the end of the tenth year, for example, to illustrate the point, we would still pay this figure of $2,925,000 into the fund, and under such an arrangement I must assume that the amount last stated has been allowed for rate purposes. I must also assume for my illustration that the 8%, the rate of return, on $75,000,000 is usable, in which case the $2,925,000, as I said before, must be placed in the reserve fund. The $6,000,000, which is 8% on $75,000,000, the total amount returnable to the security holders, is the return on the $75,000,000 and is the only fund out of which any payments can be made; but under this sinking fund of 6%, in that year you have approximately $2,000,000 that must be placed in the fund for the accumulation of interest. Therefore, the $2,000,000 can only come 1073 out of the $6,000,000 balance of earnings there, leaving only $4,000,000 for the security holders, which amount is not 8% return on the $75,000,000. In other words, 16 times $2,925,000 lacks $28,000,000 of accumulating $15,000,000 in 16 years. Unless the interest added to make up this $28,000,000 comes from outside the company's operations, it must come out of the sum representing the 8% allowed on the $75,000,000 rate base. In the ultimate wash-out the security owners would be short just $28,000,000 of the two funds to which they are entitled as the owners of the securities of the companies.

Cross-Examination by Mr. Slaff.

Our firm does accounting work for Cities Service System and its subsidiaries. Among other companies we have represented are the successor to the Texas-Louisiana Power. We did some work for General Water Works. We did work in the Associated Gas Group recently for the receivership. We have done some special work in connection with the reorganization of Middle West. In recent years we have done work for the New England Power group, formerly in the Insull group, and I believe some of their work is still handled by our Boston office. I do

not know the names of those New England companies. They are in Augusta, Maine. We have done work for the Kentucky utilities before they went into the Insull group and while with it, and for other Lexington utilities. We have done some work for the Motor Coach Group. This is all that I remember, although it is not all of the work we have done in the utility field.

I have never testified on the subject I have covered in my testimony here. I have never testified for any utility.

Redirect Examination by Mr. Morgan.

I have never testified in a proceeding involving natural gas producing and pipeline companies.

(EXHIBITS 141 and 142 were received in evidence over the objection of counsel for each of the two Commissions, to whom the Examiner allowed exceptions.)

1074 J. A. EMERY, recalled by defendants, testified:

(October 3, 1939.)

Direct Examination by Mr. Morgan.

I have testified before in this case. In my former testimony I stated that I had made a study of two phases of this case, namely, the going concern value assignable to the properties of the two companies and the rate of return which is required on the rate base. I stated in my testimony before that my firm, Ford, Bacon and Davis, Incorporated, is engaged in a general engineering business. They have engaged in practically all of the phases of the natural gas business beginning practically with the beginning of the development of natural gas. As I stated before, they have made original estimates, surveyed marketing prospects, designed and constructed lines, participated in the financing or the raising of necessary capital, developed the markets, operated the lines, and actually marketed the gas in the course of their activities. We have had an interest in the Southern Natural Gas Company, which purchases its gas in the Louisiana fields and transports it to Alabama and Georgia.

In connection with my preparation in this case and in other cases, I have given thought and study to the subject

of financing a natural gas pipeline project and to the necessary rate of return to attract capital to this character of business. To obtain the money necessary for the establishment of the enterprise, it is necessary to hold out sufficient inducement. First the safety and facility of conversion of the capital must be provided for, and second an adequate rate of return. By safety of investment I mean that a man who is investing capital desires to make sure that he will get it back. I am referring to the return of the capital through provisions for returning the capital intact at some time in the future or the facility for selling out the properties.

Most all enterprises entail risks, some more than others, so the degree of risk must be carefully examined into. An investor is interested in the degree of risk involved in connection with the return because that is an index of the safety of his principal and his interest on the return of the capital. It makes a difference to him as to the risk involved. The greater the risk, the greater the return he must have.

By rate of return I mean the annual compensation for the use of the capital. That means the amount remaining after all charges to which the company is subjected, including operating expenses, taxes, and, in the case of an extractive industry, depletion or amortization.

I spoke about the influence of risk or hazard and have stated that the greater the risk, the greater the return must be in order to induce capital to enter a particular kind of enterprise. As I have already stated in my former testimony, I am familiar with the natural gas business and that my firm has had to do with a great many different types of enterprises and activities. The natural gas industry, particularly when it includes production, is more risky than the average business. When compared with an ordi-
1075 dary utility such as an electric utility, a manufactured gas utility, a water distribution company, or any type of continuing enterprise, there is more risk involved in the natural gas business. I say this primarily because it is a so-called extractive or mining industry, but there are other important reasons. The pipelines are subject to most of the risks of the distributing companies who purchase gas at wholesale from the pipelines. In addition to those risks, the pipelines have risks peculiar to themselves. The reason I say that the pipelines have the same risks as the distributing companies is because if the busi-

ness of the distributing companies suffers, the business of the wholesaling pipeline from whom these distributing companies purchase their gas must suffer also. The amount of gas available on which the life of the pipeline depends is bound to be known only to the extent of an estimate, the geologist's estimate, which may or may not be right. The field also is subject to drafts for other purposes, such as other pipelines, carbon black manufacture or gasoline processing. Then the field as it stands is subject or may be subject to damage in the future by the intrusion of salt water or the migration of sour gas into sweet gas areas.

It is not possible to predict with certainty the full extent of the drafts on a field over a long term of years. There is always a possibility that others will enter the competition for the product itself. If another pipeline should be built from the same source of supply, or if other carbon black industries should enter the field and utilize sour gas for the manufacture of carbon black, such a development would tend to limit or reduce the amount of gas available for these companies, and it would shorten the life of the companies and would increase their operating expenses in later years by reason of the reduction in pressure.

If we assume that through the investigations and researches of the geologists the extent of the present reserves of gas in the Texas Panhandle field can be ascertained with a reasonable degree of certainty; that the number of wells that have been drilled and which will hereafter have to be drilled can be ascertained with a reasonable degree of certainty; and that the cost of operating those wells and maintaining the equipment used in connection with the production of gas from these wells, and the operation and maintenance of the other pipeline equipment, including the pipeline itself, the compressor stations, and other facilities, can be ascertained with a reasonable degree of certainty under conditions assumed to be most favorable, the providing of an annual reserve for amortization over the indicated life of the field based on such assumptions does not remove the hazard involved in the question of whether or not the capital of these investors will be returned to them by the time the field is exhausted. It is almost certain that in a term of years there will be some circumstances not favorable, even assuming that the market is always available and favorable, or the estimates are made altogether under favorable circumstances. If the funds provided for

the return of the capital be distributed over the entire indicated life of the field, which, in the light of defendants' testimony, we will assume to be 16 years from the first of January, 1939, an investor would consider his money subject to hazard because he could not count definitely on all conditions being favorable. That circumstance makes the required rate of return to attract capital higher.

1076 The fact that estimates of the kind I mentioned a little while ago are always attended with uncertainty and that the field might last a year or two longer than 16 years instead of playing out or becoming exhausted one or two years short of that period does not remove the hazard I mentioned. Of course, it reduces the odds somewhat but does not remove the hazard. It is naturally always a guess in the natural gas business as to whether a field may run longer or shorter than expected. If it should run shorter than expected, the investor has very litle chance of recovering all his capital. If it runs longer than expected, the situation must be dealt with according to the conditions at that time by the regulating body. The Federal Power Commission cannot protect the investors in defendant's properties against losing a part of their capital due to the lives being shorter than that indicated by the testimony under the most favorable conditions principally because his business is a highly competitive one, and even if they were permitted to charge higher rates in an effort to recoup the deficit, they could not get them. Secondly, the process of getting rates raised is something that requires time. In the first place, the condition has to run long enough to constitute proof, and in the second place, it takes considerable time to establish that as proof.

Since this company operates in several states and is itself subject to Federal regulation, it would have to expect more than one rate proceeding before it could succeed in increasing its rate. There would be a rate case in the Federal Power Commission, and every one of the distributors purchasing gas from this company would have to go and get its rate increased in order to meet the increased price which the Federal Power Commission might provide.

There is a hazard involved in the circumstance that the pressures of the gas any place in the field will inevitably decline as the gas is withdrawn from the reservoir from which it is taken. As the pressure declines the yield of gas declines, and the cost of pumping it from the wells and putting it into the lines increases. The circumstance that

the volume of recoverable gas from a well decreases as the pressures decline is met by the drilling of more wells so far as the field will permit. In other words, it requires more wells to produce 210,000,000 cubic feet of gas at 175 pounds pressure than it would at 350 pounds pressure. The record shows, as I am informed, that the company has undertaken to predict the cost of additional wells which they can now foresee, the cost of providing field compression necessary to get the gas from the wells into the main line, and the minimum cost incident to the drilling of such wells and the boosting of the gas into the line.

If it be assumed that these predictions are accurate, they do not remove the hazard, because it cannot be expected that all conditions will be favorable for 16 years. Even if the witnesses have testified that to the minimum figures for capital replacements and for maintenance should be added 10% to cover hidden requirements or contingencies that cannot now be definitely foreseen, the hazard I have been discussing is not removed, because that allowance for contingencies does not apply to the operating expenses. While an investor would doubtless require protection to the extent of 10% for contingencies, he would still feel that there were hazards beyond that.

1077 There are other hazards confronting the investors in these particular pipelines. There is naturally a considerable hazard attached to a line 1,000 miles long. In this particular case the line is operated at high pressure and is so designed that there is a higher stress on the metal than on any other line that I know of. The stress utilized by these pipelines is approximately 70% of the elastic limit and something less than 50% of the ultimate strength. That is considerably higher than the usual stress at which steel is worked in the transportation of natural gas and entails great vigilance and skill on the part of the operating organization. This is true because of possible variations in the texture and thickness of the metal, because of the possibility of mechanical shocks, and because of deterioration due to the impact of changing pressures. When stress is applied and taken off and then applied again a great many times it produces some deterioration in the metal and in its strength. That is a subject about which a great deal is not known at the present time. It is commonly referred to as fatigue.

There is no history prior to the operations of these pipelines from which they can arrive at a certain conclusion

as to how long they will be able to continue applying the stresses at which they are now working the steel. This is the only pipeline system that I know of which applies such large stress. The fact that for the past seven years, or nearly eight years now, this pipeline has been in operation and that during the last three or four years it has subjected its equipment to this stress and that notwithstanding some breaks and interruptions they are still operating the lines at such stress and are transporting 200,000,000 to 210,000,000 cubic feet daily through the lines, does not mean that they will continue to be able to do that indefinitely over a period of the next 16 years. Deterioration of the metal must be looked for. I should have added that in the welding and construction of the line there are internal stresses set up in the metal, and when those operate together with the stresses due to the load they might exceed the elastic limit. Such cases are likely to turn up not only at the beginning but at any time during the life of the line.

If as a result of these high stresses and the aging of the line it should turn out that the volume of gas and the pressures at which that gas is transported are too large or too high, the immediate result would be the expense of repairs and the interruption of the business, but if it became necessary to reduce the pressure, it would reduce the earnings substantially. The situation could be handled only by reducing the pressures at which the gas is transported. Naturally, that would result in a smaller volume of gas moving through the system.

As the senior vice president of my firm and a member of its executive committee I keep in touch with all of its activities. Naturally I keep closer in touch with some things than with others. Of course, I cannot keep in touch with all of them as to details. The firm entered the natural gas business in about 1907 when they made a very extensive study of the natural gas business in West Virginia and western Pennsylvania as a part of a report on the Philadelphia company which owned these properties. As a result of this report the syndicate invested in the Philadelphia company, and the firm took an interest in that syndicate. The Examiner asks me how I fitted into that study. My answer is practically not at all. I was in the south at that time, and came to the New York office later than that.

1078 The first intimate contact I had with the natural gas business was in a study of the market of the Union Gas Company, operating largely in southern Ohio. Then I

organized and for about six months was in charge of a valuation of the East Ohio Gas Company, the Peoples Gas Company, and the Hope Natural Gas Company. After my intimate connection with that valuation I was engaged in consultation from time to time as long as the work was in the office.

Questions by the Examiner.

All phases of the business were covered in that connection because it was supposed to lead up to a rate case. I do not remember definitely what was done regarding rate of return in which the matter of hazard would have been discussed. For the past twenty years I have been more or less intimately connected with natural gas matters. That has been one of the activities of the office. Financing matters are almost always discussed among us. I do not know of any of them that have been under my supervision in that respect.

I had some rather intimate connection with the projection and construction of the Edmonton system in Alberta, Canada. The matter of hazard in the natural gas business is something that is always thought of in connection with natural gas operations. In connection with my preparation for this testimony I consulted with engineers very thoroughly as to the operating characteristics of these pipelines. In our office there are several engineers who devote practically all their time to this business, and I discussed it very thoroughly with them. They advised me as to what the hazards would be in the operation.

Direct Examination by Mr. Morgan Resumed.

I sent one of my partners, Mr. Hill, who devotes practically all of his time to the natural gas business, over the properties of these companies and have a report from him directed to me concerning the stresses under which the lines are operated and the operating conditions which he found there. Mr. Hill is an engineer. He was vice president and had entire charge of construction and the first two years of operation of the Edmonton Company. He had charge of construction of the Interstate Company and was its president for several years. He had charge of construction and was general manager for several years of the Colorado Interstate. He had charge of construction and was vice president of the Southern Natural Gas Company for several years.

I think the public would consider these hazards in their

attitude toward investments in natural gas properties. My firm has participated in the sale and in the financing of such a company. My firm built 250 miles of the line involved here. Mr. Hill, the man who went over the property, as I stated a little while ago, was the man in charge of that building. The line crosses about thirty rivers, most of which have changeable banks, so that in a great many cases there is danger of the disruption of the line by floods. It is a very important hazard because it entails a good deal of money for repair and loss of business during repair.

There is also danger from landslides and earth settlement and mechanical shocks due to obstructions in the line.

At the distribution end of the line this company's
1079 business is subject to the same hazard as the distributing company, in that it is in competition at all points with other fuels. The principal market for domestic gas is in cooking, and that is being encroached on by electric cooking. House heating by gas is in competition with oil and coal. All industrial gas business is highly competitive. The company is continually faced with a restriction in business due to changes in the prices of coal or in the methods of burning it.

These companies are subject also to the general hazard of inflation. A large part of the governmental agencies are operating under unbalanced budgets. That means that sooner or later they will have to be worked out either by increased taxation or an inflation of the currency. An inflation of the currency would mean that wages and all prices of materials would have to be increased. The other alternative of increased taxes would affect these companies. It has affected them already. More taxes have been applied than were in force at the beginning of operations, and the rate of taxation has been raised. My staff and I have investigated the books and records of the company bearing on its operating costs and its taxes and other costs of that character. We have found a substantial increase in the taxes, both in number and in rate per thousand. These increases might be met by increased rates after a rather expensive delay, but first they must conduct operations at the increased cost long enough to give proof.

It is my view that investors in natural gas securities have taken cognizance of the risks which I have discussed here, and would take cognizance of the special hazards confronting these companies, and that they have considered these risks in the prices they have paid for natural gas

securities. I am able to determine that they have taken cognizance of these hazards by comparing the ratios of market price to earnings. I have made a study to determine what appraisal the public has made of these risks and hazards. First I made a search of market and financial records and have obtained a list of all natural gas companies having transmission lines, all of the securities of which are dealt with so that market prices can be obtained, and I have found 11 companies which answer to that description. I confined this study to those which have transmission lines so as to get companies as nearly similar to this one as I can. I make a distinction between a company which owns distributing facilities only and those which own facilities for producing and transporting gas. The risk is less in the case of companies which distribute only, and I have not included them for that reason. The risks in the case of companies which distribute only are less because their property will be useful after the natural gas reserves are exhausted. All of the capital does not become useless upon the exhaustion of the source of supply, and the distributing companies are less subject to competition than pipelines.

The fact that a transmission line owns a distributing company and is not one standing on its own bottom, that is, one which is confined to transmission and/or producing properties, is a circumstance which enters into the risks involved in the securities or capital investments. The ownership of a distribution system which buys from the pipeline insures to the pipeline the control of the market and also adds to its total investment a proportion of lower risk property. All of its investment is not tied up in something that will be lost when the source of supply has been exhausted.

1080 I have not included in this list of 11 companies all the pipelines which are engaged in the transportation or production, or the transportation and production of natural gas, but only those for which I could obtain records of the market sales of all the securities. I have no way of knowing how the public appraises the securities except by what the public has done when the securities were offered for sale and when they have been sold in the exchanges and markets. I consider that the best evidence of value and of the required ratio of investment to return.

(At this point counsel handed the reporter a document entitled "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Data Concerning Rate of

Return, Witness J. A. Emery," with the request that it be marked for identification. At the direction of the Examiner the document was marked Exhibit 148 for identification.)

The list of companies who own transmission lines, concerning which I was able to get the data above mentioned as to the fair appraisal of their securities, is: Interstate Natural Gas Company; El Paso National Gas Company; Memphis Natural Gas Company; Southern Natural Gas Company; Lone Star Gas Corporation; Mountain Fuel Supply Company; National Fuel Gas Company and its subsidiary Pennsylvania Gas Company; Union Gas Company of Canada; Kansas Pipeline and Gas Company; and Oklahoma Natural Gas Company.

Of these 11 companies only one is confined to the production and transmission of natural gas, the Interstate Natural Gas Company. Three are confined in their operations to the transmission of natural gas. These are the El Paso Natural, the Memphis Natural and the Southern Natural. The next five are what we call integrated operations. They include in their operations all three activities, production, transmission, and distribution. The other two, the Kansas Pipeline and the Oklahoma Natural, have transmission and distribution but no production, except that the Oklahoma Natural has a small amount of production.

I have listed these companies on page 1 of Exhibit 148. The group of figures in the first three columns of this exhibit gives the market appraisal of the value of the securities at the high price of the year 1938, at the low price, and at the average price between the high and the low. The next column shows the earnings in 1938 applicable to return on investment. The next group of three columns shows the rate which the earnings bear to the market appraisal at the high prices, at the low prices, and at the average, respectively.

The figure $23,823,825 shown under the subcaption "High" in the first column of figures opposite the name Interstate Natural Gas Company on page 1 of this exhibit is arrived at by multiplying all of the securities outstanding by the high price of the year. (Objection by counsel for Illinois Commerce Commission overruled.) There were 952,953 shares of common stock of no par value outstanding, and the high price of the year was $25 per share. Multiplying the number of shares by the price gives us a total of $23,823,825. There is nothing but com-

mon stock outstanding in that company. The low price paid for that company's stock during the year 1938 was $17.50 per share and the high price, in 1938 was $25.00 per share.

1081. If you figure the value of all the stock at the high price, you get the valuation already stated, which, applied to the earnings of the company applicable to this stock, gives an earnings price ratio of 8.53%.

Over there under the caption "Annual interest and earnings" as set out the earnings for the year 1938 applicable to this stock. These earnings are after all necessary charges, such as operating expenses, taxes, depreciation, amortization, etc. This return is attributable to the stock itself and is available for dividends on the stock.

If we multiply the total number of shares by the lowest price paid for these shares during the year, we find the market value is $16,676,678, which, applied to the earnings, gives an earnings price ratio of 12.19%. Those are the figures shown in that line on page 1 for the high and the low. The average investment and the average return are obtained by taking the average of the investment valuation and dividing it into the earnings, which produces 10.04%. The reason I have taken the high and the low and the average is that it is hardly fair to take a figure for the valuation of one of these properties based on the sales in one day, and I consider the fairest way is to take the sales over the range of the year and show the highest and the lowest. The result we reach is what I have termed the public's appraisal of the value of that stock at the high price, the low price, and at the average.

These rates of return shown in the last three columns here are the actual yields in 1938 based on the high price and the low price and the average of the two prices which the investors in that stock actually earned in 1938.

I got the information as to the other companies in exactly the same way. In the case of the other companies there was generally a variety of securities, bonds and stocks. On page 3 we find the detail as to the securities of the El Paso Natural Gas Company. On the first line there were $6,000,000 face value of 3½% coupon rate bonds outstanding. There was no market quotation during 1938 on those bonds, but there is a record of a private sale at 98½, and I have consequently used that price for both the high and the low. There were $3,480,000 of Serial Bank Loans. Those are not traded in, and I have entered them

at par. The bank never advances any more than the principal of the note. There were 14,797 shares of 7% preferred stock which sold at a high of 109, giving a valuation of $1,612,873, and at a low of 102, giving a valuation of $1,509,294. There were 600,853 shares of common stock, of which the high price was 29¾, giving a valuation of $17,950,483, and the low price was 17, giving a valuation of $10,214,501. The total valuation of these securities at the year's high price was $28,953,356 and at the low price was $21,113,795.

The next column shows the interest applicable to the bonds and loans, the 7% applicable to the preferred stock, and the balance applicable to the common stock, making a total of $2,479,154. This was 8.56% of the valuation at the year's high price and 11.74% of the valuation at the year's low price, and those figures haveen carried into the line opposite El Paso Natural Gas Company on page
1082 1, to which I have added on page 1 the average of the market price and the average return. The average return on the average of the high and the low appraisals was 9.9%.

(Mr. Timberlake, assistant to the witness, made the following statements which were adopted by the witness: "I do not have the face amount of the first mortgage bonds under sale at 98½ that I was discussing. It will require quite a little investigation to determine how many shares or bonds were sold at that particular price, and unless it was listed on the open Stock Exchange, it would be impossible to get the number of shares or bonds that were sold at the price. The first mortgage bonds were all sold at that price. It was not a public offering. It was taken by private interests and the whole issue was $6,000,000).")

I have the same detail as to each of the other nine companies worked out on pages 4, 5, 6, 7, 8, 9, 10, 11, and 12 of the same exhibit. I dealt with just the securities that were outstanding and which were negotiated during that year, and if I did not have such securities, I did not use the companies'. It was only those securities on which the public, either by public sales, or by private sales, made an appraisal value of the securities by the price it put on those securities. Turning back now to page 1, we find that based on the highest market valuations the one company classified as a production and transmission company earned 8.53% on the highest appraisal of its securities, 12.19% on the lowest appraisal, and 10.04% on the average

of the high and the low appraisals. I would say that this company, the Interstate Natural Gas Company, comes nearer to the Natural Gas Pipeline Company of America than any other company on the list in that it owns only production and transmission facilities.

The investor in the securities of the three companies following this one, which I have classified as transmission companies, earned at the high price 8.03%, at the low price 10.4%, and average of 9.06%. I should have said regarding the Southern Natural Gas Company that besides a small amount of production it also has a small amount of distribution. It owns two small distributing subsidiaries.

The next five companies, which I have described as integrated companies, omitting the Pennsylvania Gas Company, which is a subsidiary of the National Fuel Gas Company, earned 6.62% at the high price of the year, 8.8% at the low price, or 7.55% at the average between the high and the low price.

he other two companies, which I have classified as transmission and distributing companies, earned at the high price of the year 6.18%, at the low price 8.06%, an average of 7%. The over-all average of all these companies, including all four of the classes of companies, earned at the high price of the year 7%, at the low price of the year 9.28%, an average of 7.98%.

It seems to me very clear that the companies shown in the upper brackets, that is beginning with the production and transmission, require higher rates of return than those in the lower brackets, which are confined to transmission and distribution. As between those engaged in production and transmission and those which have no production, there is a distinction evidenced by the fact that the average return required in the one instance is 10.04% and in the other an average of 9.06%. When we introduce the distribution facilities the required return is still further reduced, and is there only 7.55%. When we eliminate the production from the integrated company, the required average is 7%, which is still lower than that of the integrated company which owns production. As compared with the average of all of them, these figures indicate that the investor requires from 1% to 2% more for those companies which have no distribution facilities.

Page A of Exhibit 148 contains a summary of the average required rates of return to which I have just testified.

It shows the same information in summary that is shown in the last three columns on page 1, grouping the companies as we have grouped them on page 1.

On page 4 where we have "B—Taken as Par," the reference is to bank loans which we considered to have the value of par. I don't think the footnote C on page 5 enters into the computation in any way except to show a division of earnings between the Class A and Class B
1083 stock. On page 9 the footnote B points out that there were apparently no sales, and the price was based on the end of the month bid quotations. I pointed out that the data for this company was not used, however, because it is a subsidiary of the National. It is set forth on page 1, but the figures concerning its earnings did not enter into the average. To the footnote B on page 10 I might add that I think the earnings applicable to these issues mentioned in the footnote B are not included in the annual interest and earnings applicable to the securities listed. In footnote D on page 11 it is noted that the information was obtained from a Securities and Exchange Commission report. I think it was in connection with some financing. It is a study that the S. E. C. makes every year of public financing of public utility securities.

Cross-Examination by Mr. Booth.

I have a general knowledge of some of the companies included in Exhibit 148. I studied the public reports of various companies, and I conferred with Mr. Hill, who is quite familiar with most of them. I mean the same Mr. Hill, an officer of my firm, to whom I referred in my testimony earlier today. He has devoted practically all his time to natural gas matters for 18 years since he has been with us, and for several years prior thereto. As to whether or not I am in a position to state how these companies and their operations are comparable in a specific way to the operations of defendants, that depends on how far you want to go specifically. The Interstate Natural Gas Company produces and transmits gas and buys some gas. It sells its gas largely, if not altogether, under contracts calling for large deliveries. Its transmission line is considerably shorter than that of Natural Gas Pipeline Company. It is only about one-fourth as long. As to whether this line is comparable to defendants' line, it is not as large as the Natural Gas Pipeline Company of America.

Questions by the Examiner.

The pipeline is about 250 miles long, as compared with 950 for defendants. In size the pipeline is 22 inches in diameter, and it extends from Monroe field in northeastern Louisiana to a point below Baton Rouge. It has the same physical obstacles to overcome that the Natural Gas Pipeline Company has. Its principal markets are Baton Rouge, and at a point to the south of Baton Rouge it connects with the pipeline to New Orleans, which it supplies. It sells at wholesale to a transmitting company that in turn supplies New Orleans. I don't know just what the connections are between that transmission company and the distribution company in New Orleans. I think they are both owned by the same parent company.

The capacity of the pipeline is 160,000,000 cubic feet per day. I don't know just what the division of business is, but I think that roughly half of it is sold at Baton Rouge and half of it goes south. In Baton Rouge they supply the local distribution company, but principally the refinery of the Standard Oil Company. If the Standard Oil Company's refinery in Baton Rouge were to be left out, I don't think the industrial load in Baton Rouge is comparable to that in Chicago. They supply the company which supplies the domestic market in Baton Rouge. The demand for domestic gas in Baton Rouge I would say is somewhat less than in Chicago per capita because of the less heating required and the large Negro population. The population of Baton Rouge is about 50,000. That is not comparable to Chicago in size.

1084 *Redirect Examination by Mr. Morgan.*

Due to the fact that these companies have a pipeline which is about four times as long as that of Interstate Natural, the defendants have the greater hazard. There is more hazard in a 1,000-mile line than there is in a 250-mile line. I stated a little while ago that the line is 22 inches. They have some 22-inch line. The line from Baton Rouge to New Orleans, which is owned by the Southern Gas and Fuel Company, a subsidiary of United Gas Company, is an 18-inch line.

(EXHIBIT 148 was offered and received in evidence over the objection of counsel for each of the Commissions, to

whom the Examiner allowed exceptions. EXHIBITS 144, 145, AND 146, offered in evidence at a prior date, were admitted in evidence without objection.)

From the notes I have with me I am not able to prepare a complete answer to the Examiner's questions as to what the explanation may be of the circumstance that the Southern Natural Gas Company's securities sold in the year 1938 indicated a lower return on the market appraisals of the valuations involved than did those of Lone Star Gas Corporation and the Union Gas Company of Canada. I will be prepared to discuss that point on cross-examination.

Just before adjourning Mr. Slaff asked me if the City of Baton Rouge was comparable to the City of Chicago. I had pointed out that half of the Interstate Natural Gas Company's production goes to New Orleans. I don't know just what the proportions are for domestic or city distribution. So far as the volumes are concerned, the City of New Orleans as an outlet for natural gas is comparable to Chicago.

The essential problems of production and transmission in the case of these companies listed in Exhibit 148 and those of defendants are all of the same nature, and the differences are only those of degree. I know of no case in which the problems of the Natural Gas Pipeline Company do not involve more hazard on account of differences in degree than these others set out in Exhibit 148. When I use the expression "Natural Gas Pipeline Company of America" I mean to include Texoma, for I am treating them as one project.

Another reason why these companies in my opinion would require a higher rate of return than the average of the companies with which we deal in Exhibit 148 is that there is a market for the securities or for most of the securities of the companies listed in that Exhibit. If there is no market for securities, any investment in them becomes frozen, and an investor is more hesitant to freeze his money than to invest it in something that is traded in. There is no market for the securities of defendants, and consequently, an investor would be more hesitant to invest in them, other things being equal, than in these other securities, and therefore he would require the inducement of a higher rate of return.

I point out also that this table in Exhibit 148 is prepared on the basis of 1938 prices and markets. It is notorious that on account of the plethora of money, yields were low at

that time, and therefore I would think that normal yields could be expected to be higher than those shown here.

1085 Also, the projectors, investors in, and operators of these defendant companies have shown and developed an outstanding degree of skill and enterprise in three particulars. First, the pressure at which the line is operated is much higher than that on any other line in existence before it was built, and I know of no other line of any importance that is operated at anything like so high a pressure today. Second, the design and operations of the line is such that the working stresses on the walls of the pipe are much higher than on any other line that I know of. This results in a smaller investment per unit of capacity. Third, the capacity factor of this line is much higher than that of any other large system. In all these particulars these companies have shown an extraordinary spirit of enterprise, and in my opinion they should be compensated for that in the rate of return. If there is to be no incentive for such enterprise, naturally such enterprise will stop.

I have made a study of the records of this company with a view of determining the difference in the net earnings of the company available for interest and dividends that would have resulted had they followed along the established engineering practices and built a pipeline capable of operating at the then prevailing pressures. I have compared the net earnings of the company at the higher pressure under which they operate with the estimated net earnings they would have realized if they had dropped the pressure back to nearer the standard rate. (Objections by counsel to the two Commissions overruled.) I have not gone back to what other companies use but only to 500 pounds. That is, I have compared the earnings operating at about 700 pounds, as at present, with the earnings if they went back to 500 pounds. By the standard rate of pressure I mean the maximum amount of pressure used by the other pipelines, which runs from 400 to 450 pounds. Comparing the actual earnings with the estimated earnings at 500 pounds pressure, the earnings at 700 pounds pressure show 1.6% greater on the estimated cost of reproduction and 1.8% approximately greater on the book value. My comparison was based on the operating results of the years 1936, 1937, and 1938.

The actual sales for the three years averaged approximately 74,000,000 M. C. F. per annum. If the pressure were reduced to 500 pounds, it would only be possible to

pass about 56,000,000 M. C. F. through the line, and that added to the field sales makes a total of approximately 59,000,000 M. C. F., as compared with the 74,000,000 M. C. F. average.

The revenue from the 74,000,000 M. C. F., including gasoline revenue, was $14,853,600. I have considered that if the capacity of the line and the amount of gas delivered is reduced, it will all come out of the cheaper gas, so that the estimated operating revenue is not decreased in proportion to the decrease in gas transported, and amounts to $13,032,914. The operating expense, variable with the volume of gas sold, now amounts to $1,741,839, and I estimate that that item would amount for the smaller quantity to $1,367,343. The operating expenses not variable with the amount sold were $2,134,630, and I have estimated that that would be the same for the smaller volume, making a total operating expense of $3,876,469 at the present time and an estimated total operating expense for the smaller volume of $3,501,974. These operating expenses also include all taxes except income taxes. Income taxes actually paid amounted to $658,839. It is estimated that on the smaller volume the income taxes would be $419,717 annually.
1086 Deducting the income taxes and the expenses from the revenue gives a net income before return and amortization at the present time of $10,318,291, and I estimate that for the smaller volume the figure would be $9,111,223, or a difference of $1,207,067, which is 1.8% of the book cost and 1.64% of the estimated cost of reproduction new less depreciation. I used the figures of Mr. Hamilton as the basis for the reproduction cost new comparison. The cost of a pipeline equipped to handle gas at 500 pounds pressure would have been less than the present pipeline.

I have presented this estimate on a conservative basis. That is, if I had taken into account those lower capital costs, there would have been shown a greater saving or a greater net earning, due to the increased pressure. I have prepared these figures on the most conservative basis merely for the purpose of showing that there was at least this much of the revenue that was attributable to the employment of higher pressures. If I had undertaken to go through the laborious task of trying to develop how much less, if any, a pipeline of 24-inch capacity would cost with the old thick walled steel that was employed at that time and which would have permitted of pressures not in excess of 500 pounds, there would have been a greater difference

reflected than the differences I have stated. That brings in the question of stress, on which I have not made an estimate but have testified that it results in lower operating costs.

There was this reason why I did not make the adjustment in this figure for saving in weight of pipe. I am not sure that we could get a pipe with thinner walls. If we started out to run at 500 pounds pressure, I am not sure that we could get the pipe with the corresponding lesser thickness.

Questions by the Examiner.

There are so many expenses in connection with the pipeline that do not vary with the thickness of the pipe that I do not think there is any chance that the cost of the line for operation at 500 pounds would be sufficiently less than the cost of the existing line to offset that difference in net income of $1,400,000. Prior to the investigations and the pioneering in design initiated by the founders of these pipelines there was nothing that I know of in 24-inch pipe except a thick-walled pipe. Those who are employing a thin-walled pipe and who are using 400 and 450 pounds pressure now are using the same thicknesses as were used in this line. The pipe is sold by the ton generally. I do not think there would have been much if any difference in the cost of the pipe itself between the 500 pound line and the existing line. There might have been some difference in the joints, valves, and compression apparatus. I am not prepared to say that there would be any less cost in building the pipeline out of the type of pipe available when this project was first conceived and when these men first went to work on it. I would like to state that a determination of that question would be a rather extensive computation, and I did not attempt to go into it. I therefore took what I thought was the conservative side in setting up these figures. Now I do not by any means add these figures to any previous figures that I have set up for what I think is the required rate of return. If I may anticipate my testimony, it would have been to the effect that I think consideration should be given to this and the company should be allowed a part of it in rate of return, not the whole figure. What I have really done here is to assume the same type of
1087 pipe and the same line using the lower pressure.

(Objections by counsel to the two Commissions to the above testimony overruled.)

Direct Examination by Mr. Morgan Resumed.

The rate of return which I am going to name when we get to it does not include any allowance for this additional earning on account of the employment of higher pressures. My opinion was that this improvement should be shared by the company and the consumers and that some part of this should accrue to the benefit of the company. That is something that should be allowed in addition to the rate of return to which I am about to testify. There would have been no less cost in building a pipeline of the old type of pipe unless there would have been some difference in the cost of the joints and valves. I do not know what that would have worked out to. The right-of-way would have cost no less. There would not be so much compression apparatus required for a 500-pound line. I have simply assumed this pipeline as built and equipped operating on a pressure of 500 pounds instead of a pressure of 710 pounds. I am not prepared with the figures to show how much less would be involved in the pipeline as it exists. (A motion to strike witness' testimony denied.)

Based on the investigations I have made as to the type of business in which defendants are engaged, the risks and hazards which go with that business, and the risks and hazards peculiar to their business, and in the light of the public's appraisal of that type of business and the return required, and the other facts and circumstances concerning which I have testified, I have an opinion as to the required rate of return for the defendant companies.

(Document entitled "Estimated Earnings on Account of Increased Capacity and Delivery of Natural Gas When Operating at Higher Pipe Stresses," marked Exhibit No. 149 for identification. EXHIBIT NO. 149 offered and received in evidence over the objection of counsel for each of the two Commissions, to whom the Examiner allowed exceptions.)

In my opinion the required rate of return for these two companies is between 9 and 10 per cent per year. In arriving at the figure I have named, I have given some consideration to the compensation to which defendants are entitled by reason of the skill and management of the property. If you exclude that part of the compensation and confine it to the compensation for risk in addition to pure interest, exclusive of reward for incentive or pioneering and enterprise, I would say that a fair and reasonable re-

turn or what would be a required return would be not less than 8%. I mean that such a return would be required in order to attract the capital necessary to finance these companies.

1088 WILLIAM C. GILMAN, a witness for the defendants, testified:

Direct Examination by Mr. Morgan.

(October 3, 1939)

My name is William C. Gilman. I live in Westport, Connecticut. My place of business is at 55 Liberty Street, New York. I am a partner in the firm of Gilman and Hickey. We are financial consultants primarily in the public utility field.

We are employed by corporations to assist and advise them in the development of plans in connection with the sale to the public of securities and in connection with development of financing, reorganization and recapitalization plans. We are employed by investors to investigate special situations in which they propose to invest their money. We are employed by underwriters to investigate situations where they propose to buy securities and in turn distribute them to the public. We have appraised securities for public appraisal bodies and have performed various other services generally coming within the scope of consultants in financial work.

I attended McGill University of Montreal, Canada from 1912 to 1914. From 1914 to 1919 I was with the British Army in France, as a captain in the Royal Field Artillery. From 1919 to 1923 I attended the Massachusetts Institute of Technology in Cambridge, Massachusetts, graduating in 1922 with a degree of Bachelor of Science, and in 1923 with a degree of Master of Science.

I am a licensed professional engineer in the State of New York. Since my graduation from the University, I have been employed by the General Electric Company, the Central Hudson Gas and Electric Corporation, the Electric Bond & Share, and the Carolina Power and Light Company. While I was with the General Electric Company I was in the Engineering Sales Department from 1923 until 1925. From 1925 to 1927, I was with the Central Hudson

Gas and Electric Corporation as manager of a division of the Commercial Department. In 1928 I was with the Electric Bond & Share and the Carolina Power and Light Company primarily in training to go abroad. From 1928 to 1935 I was with the Equitable Life Assurance Society of the United States as engineer in the Treasurer's office.

In the last-named position, it was my responsibility to investigate, make trips over and study public utility and industrial companies, to prepare reports thereon and recommendations for the Treasurer and the Finance Committee with reference to possible investments by the Society in the securities of the particular companies. The Equitable is one of the large insurance companies, one of the five largest in the United States and, as such, invested many millions of dollars each year. In the field in which I was responsible the comparative figures representing investments in securities were $100,000,000 in 1928 and $300,000,000 when I left them in 1935.

It was my duty to visit the public utility and other companies, to inspect their properties in the field, in-
1089 vestigate every phase of their business, to prepare appraisals of such companies for our own purpose, to prepare comprehensive reports of such companies, and make recommendations to the Treasurer and the Finance Committee with reference to the investment policy with respect to that particular company. My duties required me to take note of the risks and hazards that confronted the company I was investigating. The type of securities usually acquired by the Equitable were bonds. The fundamental policy of the Society, which is an insurance company holding trust funds, was to obtain safety in investments, and it was all the time looking for safe places to put money. It was, of course, at the same time trying to obtain as satisfactory a yield as possible, commensurate with the safety which we demanded. There is very definitely a difference between the factor of safety of an investment in bonds and one in preferred stock, the given conditions being the same. The bond is usually secured by a mortgage upon the property and the issuing company covenants that if conditions are not met, the property goes over to the bondholders. It is a definite promise to pay. The preferred stock is simply a share in the ownership and a promise to pay dividends ahead of anything being paid on the common stock. The preferred stock is senior to common stock and consequently much safer from an investment.

point of view. The risks involved in bonds are not necessarily commensurate with the risks that are involved in the total investment or in the investment looked at as a whole. The securities represented by bonds have the first call on the total earnings of the enterprise and are safer than an investment in the whole enterprise.

In the early days of my employment with the Equitable, we had no holdings at all in the natural gas pipeline industry. During the latter part of my time with the Equitable, we did start looking into the industry and we did make certain investments in the industry. I remember the first one that was made by that Society. It was an investment of approximately $4,000,000 in the bonds of the Northern Natural Gas Company. That was the first large purchase by institutional buyers of the bonds of a natural gas pipeline company. They bore a coupon of 4¾ percent, originally 5 percent by contract but reduced to 4¾, and they were a very short maturity—12 years. The Metropolitan Life Insurance Company, the Prudential Life Insurance Company and the Mutual Life Insurance Company of New York participated in that purchase. Approximately 40 percent of the total fixed capital of the Northern Natural was represented by that issue of bonds.

I heard Mr. Delafield testify that a short time before this the Metropolitan Life and the Mutual Life bought two relatively small blocks of bonds of two subsidiaries of the Columbia Gas and Electric Company, that those companies required the Columbia Gas and Electric Company to guarantee those bonds as a condition of that purchase. From talking to the Assistant Treasurer of the Metropolitan, Mr. Mellon, who negotiated the purchase of those bonds, I learned that they would only buy the bonds of the two particular companies if guaranteed by the Columbia Gas, as they wanted that additional financial protection which they thought came with the guarantee of Columbia. (Objection by Commission Counsel overruled.) The Columbia Gas and Electric Company represented a large integrated natural gas situation and also had some electric subsidiaries of some substantial importance. The Northern Natural Gas Company is in the business of transmitting and producing natural gas, but it owns or controls, directly or indirectly, some substantial distribution facilities. At the time we purchased those bonds, the ownership of those distribution facilities was considered an element of strength.

1090 While I was with the Equitable, it did not purchase any preferred stock or common stock. I know of no institution which has invested in any substantial amount in the preferred or common stocks of natural gas companies.

I left the Equitable in 1935 and came to Washington and joined the Securities and Exchange Commission. I was assigned to a division which at that point was not defined, but later became the Public Utilities Division. The bonds of Northern Natural Gas Company that were acquired by Equitable before I left were 12-year bonds with sinking fund provisions in the security which called for retiring practically all of the bonds before their maturity in 12 years. (Objection by counsel to the Illinois Commerce Commission.) I think I have already testified that the amount of the bonds was about 40% of the total reported value of the property. There were two or three men associated with me, and over a period of time we attempted to organize the Public Utilities Division of that Commission. During my time with the Commission, this Division grew until it was a substantial organization. Counting lawyers, accountants, engineers and financial analysts, the organization embraced approximately 100 men. I was then directing head of that Division, while I was with the Commission.

I was responsible for the administration and the personnel of that Division, and was responsible to the Commissioners as the head of the staff for the administration of the particular statute entrusted to us. It was the responsibility of the staff, under my direction, to handle all of the various applications which were filed with the Commission by registered utility holding companies and their subsidiaries with reference to the issuance of securities, acquisition of assets and securities, and all other and various matters in that rather complete regulatory law. It was our duty to analyze those applications and to prepare recommendations to the Commission with reference to approval or non-approval of the particular applications.

We had rather definite requirements under the statute, findings that had to be made in connection with the approval of the issuance of securities which under Section 7 of the Act were rather definite and specific. That section referred to such matters as whether the security bore a proper relation to the security structure of the company, whether it bore a fair relation to the earning capacity of

the company, whether in general the terms and conditions of the issuance of the security were compatible with the public interest, the interest of investors, and consumers. I am quite confident that, among the security issues on which we passed and made recommendations, there were some natural gas company securities. To an extent, the natural gas pipeline companies owning only production and transmission facilities fall within the scope of the Act; although, by definition adopted by the Commission, companies which did not perform any distribution function were classed as non-utility companies.

Cross-Examination Interposed by Mr. Slaff.

The Public Utility Holding Company Act of 1938 sets out what are non-utilities, but in order to find out whether or not a natural gas company or a gas company is or is not a utility company, it is necessary to refer to that definition of a gas utility established by the Commission. That definition defines a gas utility to be a company which has facilities for distribution of gas at retail. The statute itself so states, but you have to look at the rule in order to get the proper interpretation of the term "at retail".

Direct Examination Resumed by Mr. Morgan.

1091 My duties with the S. E. C. did not require me to go out into the field and inspect the properties and operating methods and obtain other facts concerning the situation of the company whose securities were under consideration, but we did send our men out under certain circumstances. That was not the general case. It was only in special cases where such questions arose that we thought it best to send men to the field. We sent no men out with reference to any natural gas company. There were very few such companies within our regulation as a matter of fact.

The Commission itself or the staff were not required by law to establish valuations in the sense in which I think the term is being used in this case. We had no power or duty under the statute to establish valuation for rate purposes; but it is obvious that the Commission in matters of security issuance and dealing with matters in connection with the acquisition of utility assets or utility securities was required to and did look into such matters as valuation.

Some idea of the valuation would certainly be required. Every release of the Commission covering the issuance of securities under Section 7 of the Act in the opinions and findings will be found to include some statement as to the assets behind the securities being issued. In most normal cases, that statement will take the form of an analysis of the property account and an attempt by the Commission to discover and locate write-ups of property or appreciation of property and such matters; in other words, the Commission attempts in such cases to find, within the limits of practical possibility, the valuations as a basis for the sound issuance of securities.

Cross-Examination Interposed by Mr. Slaff.

I would say that those valuations are more than book figures with write-ups eliminated, because the Commission had available to it in many cases historic cost studies and such matters. These are brought out in the hearings. I think we could define "book figures" as being those figures which exclude any known appreciation, write-up on the company's own books or inter-company profits and such items.

Direct Examination Resumed by Mr. Morgan.

We concerned ourselves with the earnings or the rate of return of the companies coming within our jurisdiction. In every case, in connection with the issuance of securities it was a matter of concern as to the amount of the earnings going to service the securities. The rate of return is of a different character. The Commission had no direct responsibility with reference to a matter such as rate of return as that term is used here, but the Commission in an indirect manner had some responsibility. With reference to looking into the matter of rate of return, under Section 10 of the Act in connection with applications to approve the acquisition of utility securities or assets, the Commission was required to approve the acquisition unless it found that the consideration was not reasonable and did not bear a fair relation to the sums invested in or the earning capacity of the utility assets underlying those securities. The Commission interpreted "earning capacity" as requiring some consideration of what rate of return the company was currently

earning. I think of one instance where we considered the valuation behind the securities and the rate of return and things of that sort. Mr. Booth is very familiar
1092 with that case. It was one of the early cases and one of the important cases and involved an application to acquire utility securities by the Commonwealth Edison Company, which proposed to acquire large amounts of securities of the Public Service Company of Northern Illinois, Western United Gas and Electric Company and the Illinois Northern Utilities. The acquisition was on the basis of an exchange offer, and exhaustive studies were made by the Commission in an attempt to arrive at the answer as to whether or not the application should be approved. In connection with that application we went into the subject of the rate base of each of the companies involved and the rate of return on that rate base. We came to no final conclusion for we were not required to come to a conclusion and publish our idea of the rate base. However, in arriving at the fairness of the exchange, we had in our own minds to determine whether the exchange offer was fair and in accordance with Section 10.

We were required by the Commission and it was our duty to prepare these studies in order to make available to the Commission all of the pertinent information and the recommendations so that they would have everything before them available in order to reach the proper decision. The Commission does not recommend to the public that it purchase certain securities and that they do not purchase others. The Holding Company Act imposes very definite financial standards which must be met in order to issue securities. These investigations were primarily to find out whether or not the companies who proposed to issue securities were meeting those standards. The practical effect of a refusal by the Commission under the Holding Company Act to allow a declaration to become effective or to allow the issuance of the securities is a pretty good indication that the securities are not of a quality which should be sold and made available to the public. I think the fact that such applications are approved is of some substantial influence in the minds of investors in persuading them that the securities may be desirable to purchase.

I continued in my position with the S. E. C. for two

years, at the end of which I went back to New York and formed the partnership of Gilman and Hickey. We have occasion and have had occasion to devote considerable studies to the rate of return of regulated companies and such matters. Prior to our employment in this case, we were employed by other companies to perform services in the field of rate of return. In the latter part of 1938 I testified as to rate of return in a case involving the Brooklyn Rapid Transit Company. In the spring of 1939 I testified as to the rate of return in a matter involving gas rates in the case of the Rochester Gas and Electric Company before the New York Public Service Commission.

Cross-Examination Interposed by Mr. Slaff.

I do not remember the exact date of my testimony but it was in the spring of 1939 in Rochester, New York, before Commissioner Burritt. Mr. Gilroy acted as counsel for the Commission. In the summer of 1939 I testified as to the rate of return in the matter of gas rates of the Brooklyn Union Gas Company before Commissioner Van Namee. Mr. McAvoy was counsel for the Commis-
1093 sion. In the spring and summer we testified by affidavit in the matter of electric rates of the South Carolina Electric and Gas Company in South Carolina. In the summer of 1939 my partner testified in Georgia in the matter of the rate of return in the Georgia Power and Light Company.

Direct Examination Resumed by Mr. Morgan.

I assisted in the preparation of statistics and the development of ideas presented in that last mentioned proceeding.

I have been requested to make a special study of the requirements for the rate of return of defendants. I was engaged in May, 1939, since which I have devoted a substantial amount of time to this matter. I have spent a considerable amount of time in my office, considerable time in conferring with company executives and counsel, and some time in a trip over certain portions of the physical properties owned by those two companies. I visited the northern end of the properties at Joliet, the measuring and reducing station, and I visited the

properties at the southern end of the line including the compressor stations at Fritch and Gray, Oklahoma. I had previously visited one or two compressor stations in the central part of the line a number of years ago. I spent some time in the offices of the company at Chicago and Amarillo, Texas. I requested certain information from company officials, such as maps, contracts and balance sheets, income statements, breakdowns of operating statistics over a period of years extending really from the start of the company's existence to the end of 1938, and certain figures covering portions in 1939. In addition to that, I studied I think it is volume 62 of the Federal Trade Commission investigation which contains a substantial amount of information about the historical development of this enterprise and its history up to the end of that study, which was as I remember 1933.

I have read the testimony of Mr. Floyd C. Brown. I chose his testimony especially because he was vice-president and general manager of the company and a man with whom I had talked. I felt that his testimony, being general in character and primarily devoted to such things as the development of the enterprise and its present status in the field of natural gas supply, would provide me with certain information which I should have and which probably could be obtained in that way better than by addressing to him a series of questions or a questionnaire. I also talked with the general superintendent and other executives concerning the mechanical and engineering problems with which defendants have had to deal and are now dealing. I talked particularly with Mr. Kesinger about such matters. I submitted a list of information where I felt I needed to have it, and I was furnished everything that I asked for. I have gone into other sources of information besides the records and properties of these companies in determining what ought to be the rate of return for them. In forming my opinion as to a proper rate of return for such companies as these I would rely primarily upon my background and experience in financial matters, having been in that field for a great many years. However, I should and have always given such cases study in connection with certain statistics and financial data for use primarily as a check and a guide on the results.

1094 (October 4, 1939.)

I prepared a summary of certain parts of the study I have made in this connection. I have not included everything I gave consideration to, of course, but certain parts of that study I have set down on paper in a document captioned "Natural Gas Pipeline Company of America and Texoma Natural Gas Company, Data Concerning Rate of Return, Witness, W. C. Gilman".

(At this point counsel handed to the reporter the document just described, with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit 150 for identification.)

Exhibit 150 contains financial data of various types which I considered of some importance and value in checking my judgment as to a proper rate of return for a company such as defendant.

On page 1 is a tabulation of natural gas company bonds, showing the bonds of eight natural gas companies. We show the price of the bonds at September 15, the latest available date, and the yield to maturity as of that date.

On page 2 I show a tabulation of gas company common stocks. I think the language explains what this page tends to portray. Page 3 shows a list of all mortgage bonds of domestic electric and gas utility companies traded on the New York Curb Exchange September 15, 1939. Page 5 shows a statement of preferred stocks of electric and gas operating utilities listed on the New York Curb Exchange.

Page 6 and succeeding pages to 15 show a tabulation entitled "Rate of Return on Invested Capital for a Large Number of Industrial Classifications".

The sheets from pages 7 to 15 being the supporting data for the material shown on sheet 6.

The chart at the end of the exhibit shows the average ratio of earnings to market prices of 12 operating public utility common stocks compared with the average yield on 10 high grade utility mortgage bonds rated by Moody Aaa.

Cross-Examination Interposed by Mr. Slaff.

Pages 7 to 15 show the companies making up the category of the companies on page 6.

The data supporting a return of 6.88 on invested capital for Automobile Parts and Accessory Manufacturers would show the invested capital for each of the companies, a total invested capital for all of those companies, and the return expressed in dollars for each of those companies and for all of those companies. That is
1095 found in my work sheets. The original sources were the Form 10 reports of these companies to the Securities and Exchange Commission. Practically all the American companies who have securities listed on the National securities exchanges are included in this rather wide cross section of American industry. As I say, the primary sources were the Form 10 reports to the Securities and Exchange Commission, but they were collected together, and my actual source is from a study at the Securities and Exchange Commission of those Form 10 reports. A separate study was made of each particular industry. An example of one of these studies is that of the Chemicals and Fertilizers entitled, "A Partial Report of the Census of American Listed Corporations. A Works Progress Administration Project Sponsored by the Securities and Exchange Commission". They have gotten out some 36 of these reports already. I have included every one that has come out.

Cross-Examination by Mr. Morgan Resumed.

Turning back to page 1, I tried to select eight companies which were typical of this industry, to some extent comparable with the companies under consideration. I obtained the prices of the bonds at September 15, 1939, and from that calculated the yield to maturity on those bonds. It will be noted the yield to maturity is with some substantial variations, extending from somewhere around 3 percent to something over 5 percent. It is indicative of the prices and yields to investors from natural gas company bonds outstanding in the hands of the public.

On page 2 are listed 16 companies. There are natural gas companies and there are also listed here a number of companies which furnish mixed and artificial gas service, because I believe it is desirable to show some of those companies. This page shows the earnings price ratio at which the common stocks of those companies are selling. It will be noted that the earnings per share

are the latest reported for public information, the market price was as of September 15, and the third column was obtained by dividing column 1 by column 2 to obtain the earnings price ratio. It shows simply that some companies' stocks are selling on as low a basis as 6.51 percent, and that other company's stocks were selling on as high as a 14.0 percent basis.

Questions by the Examiner.

It was not possible to use the same gas companies listed on page 1 for the purposes of those listed on page 2 for the reason that a number of those companies listed on page 1 have no common stock outstanding in the hands of the public. That was the only reason for omitting them. As a matter of fact, one of the difficult things in this case, is to find a sufficient number of securities on which to formulate a judgment. I think I have a sufficient number to do so, but it is a fact that there are not many natural gas pipeline companies as compared with electric companies or gas companies on which to make comparisons which are ordinarily made in the financial world in trying to appraise securities. I made no comparison of this list with Mr. Emery's list. Mr. Emery's list had to do with annual figures to the end of 1938. These figures are up to September of this year.

1096 Another thing that I should call to the attention of the Examiner is that some securities have been sold privately probably since Mr. Emery's exhibit was prepared, in which case it is impossible to get a quotation and therefore impossible to obtain a yield. I think the El Paso Company, since the end of 1938, has refinanced on a private basis. With respect to the Southern Natural Gas Company, I designate the issue as first mortgage sinking fund 4½'s. That is the same issue designated by Mr. Emery as first mortgage bonds 4½'s. I do not include the Adjustment Bonds or the Alabama First Mortgage Issue of 1951, which is shown on Mr. Emery's list. In my judgment I included the bonds best suited to portray what I wished to portray. The Adjustment Mortgage Bonds are another issue of bonds of the Southern Natural. I felt that the first mortgage issue was most indicative for my particular comparison.

Cross-Examination by Mr. Morgan Resumed.

I have not compared my data with that of other witnesses. I have not seen their exhibits and they have not seen mine.

Page 3 shows a list of all mortgage bonds of domestic electric and gas utility companies traded on the New York Curb Exchange on September 15, 1939. In my opinion, these companies here are in competition for capital with other electric and gas utility companies, and in fact with all industry in the United States. They can only attract capital and can only maintain their credit if their earnings or the rate of return on their fair value is maintained in such a manner as to support their credit standing. Investors do not go out looking for the lowest yield they can find. On the other hand, they go out and look for the highest yield that they can find, commensurate with safety. In other words, they are looking for a product of the yield multiplied by safety to reach a maximum figure. The thought that investors go out looking for the smallest yield is not borne out in the practical world. Investors are looking to the high yield, and that is one of the reasons why I have prepared this exhibit. It shows a rather wide list of electric and gas utility mortgage bonds which were traded on a national market, the New York Curb Exchange, and to that extent it is a non-selected list. It included all of the bonds traded on that Exchange during that day, covering utility companies all over the United States.

The yields obtainable vary all the way from 3-odd percent to as high as 9.57 percent, with an average yield on the whole list of 5.12 percent, which is some indication that some investors could at that date go out and invest in a diversified list of mortgage bonds of electric utility companies and gas utility companies and perhaps obtain a yield of as high as 5 percent.

Similarly, page 5 shows a list of preferred stocks of electric and gas operating utilities listed on the New York Curb Exchange. I have included in this list all of such companies which had outstanding any substantial amount of such stock which has fair marketability. There are some 35 companies, and the average yield on the whole list is 6.4 percent. That average does not show on the page but I have calculated it. It is the straight arithmetic average of the yields set out in the final column on page 5.

That is true also of the average yield of 5.12 stated for pages 3 and 4.

1097 Page 6 shows that for the years 1934, 1935, 1936 and 1937, and the average for those four years where available, the average from 1935 to 1937 when the 1934 figures were not available, computed as shown in Note 2 at the bottom of the page. The averages for the units used are again a pure arithmetic average. Those lines are not the names of firms, but classes of industry. For example to explain one of them, the Automobile Parts and Accessories Manufacturers shown in line 1, it appears that a return on invested capital in 1934 of 6.88 percent was earned. The earnings in 1935 were 13.82 percent; in 1936, 16.50 percent; in 1937, 15.2 percent; and the average for the 4 years, 13.10 percent. These figures are obtained by studying the reports of a large number of companies who go to make up this industrial classification. There are approximately 42 companies who are listed on page 7, which include all companies of any importance who had securities listed on National security exchanges. They are the same companies that the S. E. C. in their reports to which I referred a while ago used as the basis of their computations.

Questions by the Examiner.

I could only estimate the proportion of the total industry in the country that have securities listed on the Exchange which are represented by this compilation here on page 6. The only American industries excluded from this are the regulated industries, the Public Utility Industries and the railroads, and a few other industries, such as the hotel industry and service industries of that character. The list, it will be appreciated, is a very wide list, covering practically all of American industry. It was my purpose to get the widest cross section, the widest appraisal of what capital is earning in American industry, because I think it is of some importance in consideration of a problem of this kind.

We have to adopt some kind of a statistical method, and it gets down to a question of a degree of accuracy. It is possible that a finer result would have been obtained if we had taken the net operating result for each months' period divided by 12 and going along by that method we could do it for each day of the year. It gets down to a question of refinement. I think for the broad purpose and for di-

nary statistical purposes the method employed here is the common one. I should call attention to the fact that while it is stated here, I want to make it clear, that this rate of return is before income tax.

Direct Examination Resumed by Mr. Morgan.

The chart at the end of the exhibit shows by the bottom line Moody's 10 public utility bonds Aaa class, which is the standard or one of the standard indices of yields of high grade bonds. It is published monthly and available in all the services. It shows an almost continuous downward trend in the rate of interest yield to investors on high grade public utility bonds from 1932 down to September 1, 1939, when it will be noted that there was a substantial upward movement. Of course, everybody realizes that at that time there was a substantial upward movement and high grade bonds declined rapidly in price.

This, as I say, is a standard index. I had nothing to do with its preparation. I simply adopted it as being an indication of the movement of high grade bond yields.

1098 There is no such index of public utility or electric and gas utility common stocks. I felt it desirable to construct such an index, and this index above the bond index has been prepared. That has been made up of 12 operating utility common stocks, and shows quarterly during the period the ratio of earnings to prices during that time. While it will be noted that the bond yield has shown almost continuous downward movement, there has been no such similar parallel movement of earnings price ratio on utility equity stocks. In fact, the movements have been at times quite violently opposed, and the earnings price ratios of the stocks are substantially above the yields on the bonds and are trending upward at the end of this curve. The companies selected were considered to be 12 of the outstanding electric and gas utility companies in the country. Those included were the Boston Edison Company, the Cleveland Electric Illuminating Company, the Commonwealth Edison Company, The Duke Power Company, the Hartford Electric Light Company, the Southern California Edison Company, Ltd., the Consolidated Edison Company of New York, Inc., the Consolidated Gas and Electric Light and Power Company of Baltimore, the Pacific Gas and Electric Company, the Detroit Edison

Company, the Brooklyn Union Gas Company and The Peoples Gas Light and Coke Company.

The earnings price ratios shown on the chart are established quarterly, that is the earnings available for dividends as the result of the given year's operations are related to the average of the high and low market price of July and October of the same year, and January and April of the following year.

That is another well known statistical method. As a matter of fact, I originally ran into it in a Federal Communications Commission study of the theory that investors' appraisals of securities at any particular time are to some extent based on the past earnings of the company and what their expectation of the future earnings of the company is. So we equate the earnings say of 1939 to the price which existed, the average high and low, of January and April, 1940, where those fellows were anticipating the 1940 earnings, and in July and October of 1939 where ostensibly the earnings were available to them, and they knew what the earnings were and could so adjust their price ideas. The printed figures on the left margin of the page shown on the chart are meaningless. The only figures that mean anything are the figures on the right and on the left, denominated 1.0, 2.0, 3.0, and so forth, which means percent. In the case of the bond yield, it is the yield in percent. In the case of the stock index, it is the earnings price ratio, a percent. This exhibit was prepared by me and under my direction.

I have checked the exhibit and adopted the figures as my own.

(EXHIBIT 150 was offered in evidence.)

Questions by the Examiner.

The four points on the common stock graph, as applied to the year 1938, were so determined because the results for the 12 companies are obtained by taking the result for each company in turn, adding them together and then dividing by 12. Let us take the first company, the Boston Edison Company, for 1938. From the report of that company we find the earnings available for dividends on the common stock on a per share basis. I did not have the figures but they are shown in the annual report of the company to its stockholders for the year 1938, or they can

be found in Moody's Manual, which is considered an official financial document.

1099 All of these companies make their fiscal year correspond with the calendar year. In any event, in every one of the cases here, we have obtained an earnings figure for the calendar year end. Then with that one figure of earnings per share established, we would find four prices of this company's common stock by referring to such financial data as the Commercial and Financial Chronicle, the Bank and Quotation Supplement, and possibly the New York Times for the daily quotations. I said four figures, actually for the month of July and for the month of October, 1937, we would obtain the high and the low price of that stock during each of those months, and would add them together and divide by 2 to obtain the average price at which the stock sold in July, 1937 and the average price at which the stock sold in October, 1937. Then we would do the same thing for January, 1938 and the same thing for the month of April, 1938. Then we would have four prices established. We would then take those earnings which we had previously found for the year 1938 on a per share basis and divide those earnings in turn by each of those prices; namely, for July and October, 1937 and January and April, 1938. That would establish four earnings price ratios, one for July, one for October, 1937, and one for January and April, 1938. Then at this particular point, I should say first of all, since we are only dealing with one company now, we have to combine the 12 companies, and then having obtained those figures for those particular months, put them on the chart. The straight average is arithmetical and not weighted.

For simplicity purposes in preparing the chart, the established earnings price ratio for July is set right in the middle of the year 1938. That method was pursued consistently throughout the four quarterly periods. Again it comes down to a question of refinements. Possibly for more extreme accuracy, the figures should have been half way between June and July, but in matters of this kind I do not think that is essential. This chart was prepared to show the ratio of the relation between high grade bond yields and the earnings price ratio on high grade utility stocks to indicate a substantially wide spread.

The bond curve was Moody's Public Utility Bond Index AAA of public utilities. I think actually it is prepared by Moody monthly for their own purposes, and in order to

have some similarity here, I have plotted it quarterly. You will see by the way the chart moves, that the line at the beginning of 1937 goes in a straight line. In other words, where Moody's had a curve, I had a series of straight lines. Moody would have a smoother curve, though it would not be a curve because they only do theirs once a month. Of course, if you do it once a day, you have probably a smooth curve. The reason I stagger my earnings and average high and low prices is that the earnings price ratio itself is an indication of the investor's appraisal. In other words, it is earnings divided by the price. It tells what the investor is willing to pay. A common method of talking about that sort of thing is to talk about the price earnings ratio, which is the reciprocal of the other, and I think it is perhaps more commonly known. People will say they would pay seven times the earnings for stock, or 10 times the earnings for stock. It is a direct appraisal of the market by the relationship of the earnings. In other words, we use our July and October, 1938 price figure with our earnings figures, because there is a market relationship.

I probably did not make it clear as I originally stated it. My theory, and I think the well established theory is that the people who are buying stock today and who are establishing price for stock today by their orders to buy stock,

1100 are buying the stock of a particular company with several thoughts in mind. They have seen the latest Annual Report, they know what the company earned historically. Also, they are buying on what the company is going to earn because they have some idea or some information, or think they have, on what the company is going to earn in 1939. Therefore, the truest measure of this thing is by having this earnings price ratio calculated this way, rather than always on the basis of hindsight.

If we tried to do it any other way, we would be up against the proposition in 1939 of working on 1938 figures. I think it is well known in 1939, September 15, conditions are quite different that at the time those earnings were established during the year 1938. Industrial activity in this country is at a much higher tempo today than it was in December, 1938 and during that year as a whole. So in order to obtain a fairer measure of the appraisal of the equity, this method has been adopted which attempts to combine in this chart, ideas of hindsight and foresight. There are other factors in addition to earnings, which de-

termine market price, but this contract only uses and only establishes the relationship between earnings and price over the period.

Direct Examination by Mr. Morgan Resumed.

There are hundreds of factors which go to make up the price. The price is established in the minds of investors and with the investors all over the country. All such matters and everything that could be thought of enters into such things. The public's appraisal of those elements is wrapped up in the price which the public is willing to pay.

Cross-Examination by Mr. Slaff.

The reason I used the average price for one month out of each quarter instead of the average quarterly prices for each of the four quarters is that I wanted to obtain that relationship four times a year. This method will show you more rapid fluctuations, which I think should be done, than by adopting the average price of any quarter. I do not agree with you that a more accurate appraisal of the showing would be by taking quarterly high and low averages. I think we are getting away from that. The old-fashioned way of doing this would be to take the average of the high and the low for the year and equate that to the earnings for that year. I think that was from a statistical point of view improper. I think we have gone far in advance of that, and this method is much better. The reason I do not go still one step further and take the high and the low from July 1 to July 15 is there comes a question of degree in all statistical methods, where the additional refinement is not worth while in view of the results to be obtained. I want again to emphasize that this chart was not prepared primarily with any thought in mind of establishing any point of departure and saying that the utilities' stocks are worth about twelve to fourteen times earnings; that is, high grade utility companies such as included in this chart.

The chart was prepared primarily, as I said before, to show the relationship in the movement of utility high grade bonds' yields in comparison with earnings price ratios on common stock.

For your own information, Mr. Slaff, I will say that this method was the method which was developed primarily

originally by the Federal Communications Commission in their study of rate of return which you have
1101 available; and I felt that it was such a good method of presenting the data that I adopted it. As a matter of fact, they prepared a chart practically like that but they included some telephone companies, which I excluded from this particular list because I did not think it was pertinent at all. I am referring to the study that was prepared under Mr. Wheat's direction.

Cross-Examination by Mr. Booth.

The calculations on pages 6 to 15, inclusive, showing the percentage earned on invested capital were made by the Securities and Exchange Commission W. P. A. project. However, I had checked at the New York Stock Exchange a sufficient number of these calculations from the original sources to satisfy me that the compilations are correct. I made no calculations as to what the rate of return on the invested capital would be after payment of income tax. I would not say that I have no idea what the return would be on any of these corporations after the income tax deduction. It would be somewhat smaller. For purposes of comparability, in comparing a large number of companies of this kind, I understand it was not possible to make the comparison after income tax. I know that in the determination of public utility income for rate-making purposes the income is computed after the payment of income tax and other expenses. I know how this calculation was made and it is explained in Note No. 2, the net operating results, and I personally have checked some of them myself to determine exactly how the net operating result was obtained.

I was going to make absolutely clear in the record that particular point of the income tax. You will note that Note No. 2 says: "Computed by taking the net operating result for the period before interest and prior claims and income tax." That is, before interest, before prior claims, and before income tax, and dividing this amount by the total invested capital at the end of the period. It is obvious that nobody could determine whether or not the items of depreciation and depletion have been adequately taken care of before the net earnings were computed. I made no study to determine that. These figures are from the sworn reports of the companies. I do not know what

each particular company did with respect to depreciation in any particular year, but I have been over the reports and have noted the item of depreciation at that time. I would not be in a position to state that any company in the United States or in the world had in a particular period taken the proper amount of depreciation and depletion without a careful study.

You asked as to whether or not it is my opinion that an investment in, for instance, the business of the snuff manufacturers would be attended by a risk comparable to an investment in the Natural Gas Pipeline Company of America and Texoma. It is my opinion that an investment in a well selected American snuff company would be a more safe investment than an investment in the Natural Gas Pipeline Company of America. As a matter of fact, the Equitable Life Assurance Society, with which I was associated, had substantial investments in an American snuff company. I think you made a bad selection, because the statistics of the snuff industry in this country are rather amazing. I will say that the statistics for the snuff industry show a degree of stability which is at least equal to that of the natural gas industry in this country.

1102 I would not attempt to compare a particular industry in so far as any one of the fifty points of comparison that might be made to the particular companies involved here. In matters of this kind, while the Bluefield case definitely said, "Investments of the same character and of the same degree of risk must be used," from the practical financial point of view they did not say anything that investors for years have not always had in mind, what other industries are paying, and they would only put their money in these regulated industries if they could obtain a higher return in that industry commensurate with the safety they wanted. So, from the standpoint of economic principles, the Bluefield case did not do anything. I would not attempt to compare any particular company with these companies here, but the very breadth of this list covering all American industry, practically, outside of the regulated industries, gave a measure of what is being earned in other industries at the same time, and that is the only way to get such a measure.

I have not, on paper, made any comparison of any of these businesses with the business of defendants. I have been in the investment field and been responsible for the investment of large sums of money for a great many years.

In the processes of my mind, I am always automatically making comparisons. I have told you I did not make a comparison of the risks of the companies shown in this exhibit on page 6 and the risks of investment in defendants.

Direct Examination by Mr. Morgan Resumed.

The figures shown on pages 6 to 15 of Exhibit 150 simply put down in one place in tabular form what capital is earning in other businesses. Anybody in forming an opinion as to a proper rate of return must know these figures. He may not do that exactly in this way. He may not have the figures in exactly this shape. He may have them in some other form, or he may have other tabulations made, but anybody forming such an opinion must have an opinion as to what capital in other industries is earning. The conception of a fair and proper return must be taken into consideration in connection with the competition for capital. Regulated industry companies, such as the pipeline companies, only can get capital and their credit will only be maintained if they stand well with investors and are able to offer investors a rate of earnings which, combined with safety, is better than generally obtainable from other industries, and to that extent I used this compilation here. In my thinking, I did not rely solely on this exhibit nor any other exhibit as of any great weight, but in forming my opinion on rate of return I rely generally on my knowledge of the financial world extending over a number of years. The facts set out in this exhibit are a part of my general knowledge.

There were three snuff companies used in making up the line on page 6. Now, in the use of the term "comparable", it is not necessary that the companies compared be identical in all respects. "Comparable", in my understanding, means things that have characteristics, which are similar or dissimilar; that is, characteristics which are capable of being compared. If I had the time I would appraise the
risks confronting these two pipelines companies and
1103 make up my mind whether it is more or less a risky
enterprise than any one of these groups of industries listed here. But I have not used this as a basis for saying that these companies are entitled to a certain rate of return because the automobile manufacturers were making 22.03 percent and the snuff manufacturers something else, 13.98 percent, and the beverage manufacturers 37.69 percent. As I said when I made my original explanation preliminary to all of these exhibits, I have simply used this as a form

or guide or check on my judgment in the conclusion as to which I came in the matter of a proper rate of return for these two pipelines. In my opinion, it is not possible to find any other natural gas pipeline company or any other industry in the United States, which would have absolutely the same risks in every particular as the risks which have confronted and which do confront these two particular companies.

Cross-Examination Interposed by Mr. Slaff.

I do not think the word "corresponding" has the same meaning as the word "comparable". I do not see any connection between the two. As I understand the word, "corresponding" means something which resembles. However, when I use the word "corresponding" I mean two things which resemble each other in a general sense. (Objection by counsel to Illinois Commerce Commission taken under consideration.)

Questions by the Examiner.

As I stated earlier, it would not be possible to go through and make the calculations on the companies listed on pages 6 to 15 of this exhibit after deducting the income tax, and, of course, it would be utterly impossible for the Federal Power Commission to calculate proper depreciation, as counsel calls it, on those companies.

Cross-Examination Interposed by Mr. Slaff.

I used the securities listed on the New York Curb Exchange on pages 3, 4, and 5 rather than the utility securities listed on the New York Stock Exchange because the latter is very narrow. There is a much more representative list on the New York Stock Exchange. I did not bring those listed on the New York Stock Exchange into my computations at all. I thought that I had enough. I selected the New York Curb Exchange as giving a representative list.

Direct Examination by Mr. Morgan Resumed.

In connection with my examination of the properties and records of defendants, the reading of the testimony of Mr. Brown, and in the light of my knowledge of the natural gas industry and the Natural Gas Pipeline and production

industry, I have a judgment or an opinion of the character of the risks and hazards that have confronted and which now confront defendants, as those risks and hazards are viewed by investors. I have made use of this judgment in arriving at the conclusions which I will later express as to a proper rate of return for these companies.

I am and have been for a long time familiar with the character of ordinary electric utility business, and the artificial gas utility business. I have been continuously engaged for more than ten years in daily contact with problems involving utility securities and matters of utility financing. In connection with this study, I have given thought to the comparative safety or security of investment in the ordinary continuing utility and in a natural gas pipeline company engaged in the producing and transmitting of natural gas. I do not think there is the same
1104 degree of safety and security in an investment in a r ıtural gas pipeline company security backed up by produc ion and transmission properties as in the ordinary electric utility field. The natural gas pipeline and production industry is a more risky industry from an investor's point of view. I must speak generally. There may be some small or medium sized or even large sized natural gas pipelines which in a particular case are better than some electric companies which happen to be in receivership at the time. I am simply emphasizing that I am speaking generally, and I say that generally the electric industry is a much safer industry from an investor's point of view than the natural gas industry. I base that statement upon my long continuing study and observation of the electric industry, and a study of its investment characteristics, and the study of the results of many hundreds of companies, and a continuous attempt to appraise, as all people who are responsible for the investment of funds are responsible for appraising, their risks. That is the appraisal of the public in dealing with securities and the valuations placed on these securities as compared with securities by a natural gas pipeline company.

As between an electric utility and a utility distributing manufactured gas as a class, my opinion is that as a class the electric utility industry offers greater security than the manufactured gas industry. I say that because I am familiar with the characteristics of an electric industry. That industry as it exists today has at least, insofar as its domestic market is concerned, a practical monopoly in

service which it furnishes. Nobody is competing or can compete with the use of electric energy in the home, with the great number and increasing number of appliances for utilizing electric current. The output and consumption of electric energy are generally increasing from year to year. Similarly, in other fields the electric industry, generally speaking, is making over a period of years good advances. The gas industry, however, as an industry, is not in any such position. For a number of years the gas industry has been suffering in competition and has lost substantial amounts of its domestic business. Investors at the present time are somewhat skeptical of the future of the manufactured gas industry. They are not sure where it is going.

Electricity was first used in the American home for lighting purposes. At the present time it is used in the home in a countless number of ways. There are myriads of numbers of appliances which are available to the householders, reasonable in price and offer great convenience to the householder, and consequently they have had rather wide public acceptance with consequent good results for electric companies. Some of the common appliances which every home has are the ironer, the toaster, the coffee percolator, the fan; and then getting to the larger appliances, in some cases, the washing machine, in some cases an electric water heater, air conditioner, electric blanket, and a new appliance which has recently come into great prominence in a very large scale is the electric roaster, of which some several hundred thousand will be sold this year, and which will come into homes, and will to the extent that those homes now have gas service reduce the consumption of gas because they will be used once in a while. They probably won't be used every day for cooking, but the device is such a satisfactory device from the housewife's point of view, from the standpoint of convenience, that she will use it to cook a meal once in a while. They just put the food in the roaster and turn on a key which automatically turns off when the meal is roasted. That sort of a device is a device which offers some substantial hazards to the gas company in the territory wherever one is sold, and automatically results in an expansion of
1105 electric energy consumption. I did not mean to overlook the electric sweeper and electric refrigerator. Of course, the electric refrigerator is one of the most important electric appliances.

The manufactured gas business is to a great extent in competition with other fuels and other methods of doing the same job. All the manufactured gas industry provides is a heating service. It delivers to you B.t.u.'s for which you pay dollars. It can only and will only be able to continue furnishing those B.t.u.'s if it can bring those B.t.u.'s to you cheaper than you can get them anywhere else. Such things as oil, and, in certain cases, such things as solid fuel are in direct competition for heating purposes. I have already stated that the electricity is in competition so far as the use in the kitchen is concerned.

Let us go one step further and introduce the distribution of natural gas, by which I mean an owner who has provided himself with the facilities for distributing natural gas only, but does not own the production and transmission system. I mean to compare the manufactured gas industry which manufactures and distributes gas with the natural gas distributing company which purchases its natural gas from others, and does not own its production and transmission facilities. From a short range point of view, many investors would be inclined to regard the company distributing natural gas and obtaining the gas under contracts as being a desirable sort of a thing, inasmuch as the company is in a position today to sell B.t.u.'s at a cheaper price; but from a long range point of view, conditions may be quite different. If the natural gas company which is purchasing and distributing gas is confronted with the failure of its supply and it has to go back into the manufactured gas business, and perhaps build plants or something like that, it will be faced with the difficulties of rate increases in all probability, and all of the difficulties which go with that change back from a high heat gas to a low heat gas.

This change back is an extremely difficult thing. Once the customers are expecting to receive the natural gas of, say, 1,000 B.t.u. heat content at so much per thousand feet, and they are changed back to manufactured gas with some 550 B.t.u. heat content at somewhere near the same rate, they are paying about the same money for half the heat. They do not like it. A company having to undergo such a change would probably go through a financial crisis unless a public service commission acted with great promptitude and with greater promptitude than they ordinarily act. We have had several cases of that kind already in

this country, and substantial financial hardships have been encountered.

For example, in Elmira, New York, the gas company has had to change back and forth from natural to artificial gas and vice versa a number of times. In fact, it has changed so many times it is difficult to keep track as to which kind of gas they are using there. They were originally a manufactured gas company and then they went to natural gas because that became available. The natural gas supply failed absolutely and they had to rebuild and put in manufactured gas plants. A few years ago natural gas again became available from the Tioga fields in Northern Pennsylvania and natural gas is now being served.

The City of Chicago has undergone the same experience in its past history. At one time in the '90's, at the turn of the century, there were substantial pipelines running into Chicago supplying natural gas to the gas companies there from the Indiana fields. Those fields were in a very few years exhausted and the supply completely failed. The result was that the users of that natural gas had to go back to artificial gas.

Going one step further, let us compare the risks and the security of a natural gas pipeline company which owns distributing properties only and which purchases its gas from some other source, with what has been referred to here as an integrated company—a company which owns production and transmission facilities for producing and transmitting its own gas and its own distributing company.

In my opinion, generally speaking, a company having a natural gas distribution system is a safer and a less risky investment than an enterprise which has a pipeline connected to a distribution system, so-called integrated enterprise.

This is because from an investor's point of view, generally speaking, the safest form of an investment is to have an investment in the facilities which are used for distribution at their point of use. The distribution system includes the pipes and the mains laid in the street, the services and the meters running right into the house. They will probably be used for many years to come, whether artificial gas or manufactured gas, or some new gas that should be invented is used. It is probable that those pipes have long life in the streets, already laid, and

will continue in use for many years to come, and therefore will be of use. No one can tell, generally speaking, with respect to the life of a pipeline which runs from a particular field, or even a particular group of fields, to a particular spot, and their sales of gas. With the failure of the gas supply at the supply end, the pipeline is, from an investment point of view, a loss; and to that extent an investment in the distribution facilities alone is regarded as a safer type of investment than in the one where pipeline and distribution facilities together are owned. As a matter of fact, a natural gas distributing company, if the source from which it is purchasing its gas should fail, always has the possibility confronting it that it might be able to purchase gas from some other source. And if there be no such source available, it can always turn, as I have observed, back to the distribution of artificial gas.

If the source of supply should become exhausted as in the case of the integrated company which owns distribution facilities also, there is always the possibility of saving for permanent use a part of the investment that is used in the distribution end of the line, and only a part of the total investment is lost by reason of the failure of the supply; namely, the investment in the production and the investment in transmission facilities. If this integrated company be compared with a pipeline company which owns production and transmission facilities only, it appears that an investment in the integrated company is a safer proposition than one in the company which has no control or owns no distribution. I heard the statement of Mr. Delafield on that point, in which he stated at some length the advantage of owning the distributing market facilities. I am in agreement with that observation but I did not form my opinion from hearing Mr. Delafield's testimony. That is my independent judgment and was my judgment before I heard Mr. Delafield testify.

1107 There are other reasons why securities of an integrated company offer a safer and more desirable security from the standpoint of the investor than those of a company owning only production and transmission facilities. Any company which owns distribution facilities or controls distribution facilities can save a part of its investment if the production goes sour and the pipeline is abandoned. The distribution system usually represents a substantial part of the total investment. It

might be 50 percent of the total investment. This part of the investment, as I have already observed, will continue in use for furnishing heat in gas form to customers insofar as we can see ahead today; but that is not the case with reference to the transmission system from the source of supply to the place where the distribution system takes up, because they have no distribution system.

Among those companies owning only transmission and production facilities, a distinction obtains in the case of those companies which rely solely upon one source of supply as opposed to a number of sources of supply. An investor would naturally, other things being equal, consider the company which had a multiple source of supply as being a safer investment than the company which relied on a single source of supply. When I speak of all other things being equal, I am excluding supply. The fact that a single source of supply might be a large one might change the degree of the hazard on that point but it would not remove it. The hazard would still be there. It would be a greater hazard with one source of supply than a multiple supply, assuming that the multiple supply were reasonably adequate for the particular job at hand. However large the supply, it will last just as long as the total quantity divided by the total removal will permit it to do that, and it depends altogether upon who all are taking and how much as to how long it is going to last. Of course, a single source of supply from which a number of companies are taking gas represents a more risky situation than would one where a single source completely under the control of the company in question exists.

I would like to make my position clear on the question of a single or scattered source of supply. My position is this: An investor considering a pipeline which had only one source of supply would be somewhat fearful of the failure of supply in that field, whereas if this company had contracts to purchase gas from four or five fields and was obtaining gas from four or five fields with a multiple source, it is a less risky proposition. It is an application of principle of diversity. If one of the fields failed, the other four would be left, if there were five sources of supply. I have assumed in each instance that there were a number of owners who were producing on the same sources of supply. That is the situation in

practically all of the fields from which natural gas is being produced.

I think my memory is sufficient for me to state the companies on pages 1 and 2 of Exhibit 148 which have more than one source of supply. The El Paso Natural Gas has one source of supply. The Arkansas-Louisiana Gas Company, the Columbia Gas and Electric Company, the Lone Star Gas Corporation, the North Penn Gas Company and the Panhandle Eastern Pipeline Company all have more than one source of supply. The Southern California Gas Company and Southern Counties Gas Company have more than one source of supply, if
1108 my memory is correct, and I know that the Southern Natural Gas Company has only one source at the present time, the Monroe field. Turning to page 2, the El Paso Natural, Republic Natural, Southern Natural, Mississippi River Fuel, Memphis Natural, each has only one source of supply. The Oklahoma Natural Gas Company, Mountain Fuel Supply Company, Columbia Gas and Electric, Lone Star Gas Corporation and the National Fuel Gas Company, each has a number of sources of supply. I am not sure as to the Pacific Lighting Corporation, but I think it has a number of sources.

Cross-Examination Interposed by Mr. Slaff.

The highest earnings price ratio of the common stock as reflected on page 2 is that of the Oklahoma Natural, which has a number of sources of supply. Referring to bonds shown on page 1, the highest yield 5.24 is for a company, the North Penn Gas Company, which has many sources of supply. But you cannot put these things absolutely in slots. In generalizing and answering questions as to the degree of risk, you must say generally what you believe.

Questions by the Examiner.

The companies shown on page 2 with their common stocks are listed, some of them, on the New York Stock Exchange, some on the New York Curb Exchange and some over the counter. The companies like the Providence Gas Company and Springfield Gas Light Company are not listed on the Exchanges. The stock of the Oklahoma Natural Gas Company is held publicly.

Direct Examination by Mr. Morgan Resumed.

In going over the comparative safety and security of investments in different types of utilities, and in the natural gas pipeline companies, this morning, I was stating the comparative risks of those industries in general as a class. It should be emphasized that any particular company in any one class may have a different risk from that class as a whole. I have known electric companies which have the highest order of risk of any of those considered getting into bankruptcy. As between bonds and preferred stocks of the same concern, the bonds are the senior security, and of course have the lowest degree of risk. As between the two classes of stock, preferred and common, of course the preferred stock is senior and is the higher order of security. The common stock is the riskiest type of security. Investors would not buy the bonds of a natural gas pipeline company extending over the entire period of the indicated life of the source of supply of natural gas. The investors would wish to buy a bond which matured and was paid off some years certainly before the end of the projected life. The purchaser of stock in taking the risk involved would demand his price. He would demand a yield sufficiently high to compensate him for the risk that the supply would terminate prior to the time indicated. That is the only way he can be compensated for that risk, is by getting a higher rate. He has an investment in the residual earnings of the enterprise after the bondholder and/or the preferred stockholder is paid. He has the riskiest position. If any miscalculations are made, he is going to suffer because he is on the tail end. In other words, if the risks are such that the owner of the superior security gets hurt, the stockholder is counted out altogether.

1109 There are other risks confronting the pipelines involved in this inquiry which I think would enter into the value of their securities if offered to the investing public. Any natural gas pipeline company which produces and/or purchases natural gas and transports it through a line for sale is subject, of course, to the principal hazard of the possibility of failure or shortened life of the supply. Under ordinary circumstances, a project of that type would be engineered and financed from an economic point of view on the basis of a definite

life and assured life. If there are any mistakes in those calculations and the life is shorter, investors may suffer. The possibility of error one way or the other is something that definitely must be taken into consideration by investors who are considering the securities. From the investor's standpoint, there is a hazard as to the amount of additional capital investment which will be required, but I would not place that in the No. 2 position. To go ahead and enumerate the risks as I see them in the natural gas pipeline producing and transporting companies, the primary risk is the risk at the supply end. In my opinion, of second importance is the possible risk at the other end, depending upon how the gas is sold. If the company contracts for the sale of all of its gas and has no control of its markets and owns no distribution facilities of its own of any kind and controls no distribution facilities, that is a risk which investors would very definitely evaluate in considering the securities of such company.

Other risks which should be taken into consideration and would be taken into consideration by investors at the present time are such matters as regulation. Regulation under a new law which nobody knows anything about, nobody knows how it is going to work.

Other risks which to some extent are common as to other public utility companies in greater or less degree are the risks of rising costs, with fixed contract prices for your output, rising expenses for labor, materials used in the maintenance and the ordinary operation, and taxation.

Particularly, investors will take into consideration taxation when they have observed a tendency on the part of many people to urge taxation on companies of this kind on a two-cent per thousand cubic foot basis, where the taxes might be rather easily assessed. Such factors are hazards which investors are bound to and would take into consideration in arriving at whether or not they would be interested in the securities or the price which they would pay for them. In the emergency, or the so-called emergencies which have existed during the last 10 years or so, the public utility companies as a class, electric and gas utilities, have certainly had to stand their share, or more than their own share, of the special taxation to meet budget deficits. I know there is a very

vociferous public opinion which is asking for the taxation of natural gas. The miners' groups and groups like that are extremely anxious to see natural gas taxed, their point of view being that natural gas with a tax hooked onto it becomes uneconomic for industry, where the margins are very thin, and then that particular industry will have to use coal, because the natural gas company will not be able to sell its gas and there will be more work and higher pay for the miners.

It appears here that approximately 25 percent of the total gross revenues of those companies is derived from the sale of gas for industrial uses under what are called interruptible contracts. That situation adds to the hazardous position of these companies because of the thin margins which exist between the price received per thousand and what the gas costs delivered at the point of sale.

1110 Investors would take cognizance of the fact that the gas is being transported a distance of 950 miles, or more, by these pipelines before it reached the principal ultimate market. Investors are, generally speaking, slow to act and will act only in making investments in securities of companies which are to some extent seasoned, and a company such as this company, which has very long pipelines, the longest pipeline in the world, the largest diameter of pipe, the highest pressures used in the line, and being the only one of its kind and type, naturally does carry a greater risk than would the conventional type of natural gas pipeline with a shorter length and lower pressure. The reason being that, generally speaking, if anything goes wrong with this line it goes wrong in a big way. The pressures are very high, the fittings are expensive, the compressors are expensive, and our technology is not complete on the subject. By that I mean that there is no history in this type of line from which to gauge its future conduct as it ages.

If a distributing company has a line failure on some part of the line, it does not put the whole system out of business. Distributing companies are usually looped in so many places that a failure at one particular part of the line affects only a small portion of the distribution system. That is not true of pipelines. A failure of the main line at any point is an interruption of service, provided the gas in the line between the break and the point of sale is

not sufficient to carry you over the time when you can get the line repaired.

From the standpoint of an investor, the circumstance that there are 31 different streams, including the Mississippi and the Missouri Rivers, and many other rivers of major magnitude, including the Canadian River, which in many cases are very flashy, between the initial compressor station on the south end of the main pipeline, and the City of Chicago, would enter into the evaluation or the appraisal of the securities of defendants.

Taking into account my knowledge of the facts concerning the extent and character of the investments of these pipelines, their location geographically, and with reference to streams and other considerations, the fact that they are a pipeline producing and transmission system with no control over their markets and with no distribution systems, and in the light of their special risks, and of the risks which they have in common with other pipeline companies, and with other business organizations, and in the light of the general background of information which I have concerning the evaluation and appraisal of securities and the requirements for raising capital money on the securities of business institutions, and in the light of all of the circumstances which in my judgment enter into a reasonable and proper appraisal of the various risks and hazards which have confronted these pipelines, and now confront them, I have an opinion as to what would be a proper and reasonable rate of return, or a fair rate of return for these companies.

In arriving at my opinion that not less than 8 percent is a proper rate of return for an enterprise such as defendants, after proper amortization, I am primarily guided by my own experience, knowledge and judgment of investments, and my experience in that field extending over a period of years. However, in order to check that judgment, I have prepared the exhibit which I formerly testified about, namely, Exhibit 150, containing a number of statistical tabulations. These tabulations are the sort of
1111 thing that anybody who was forming an opinion as to such a question would be bound to take into consideration. I was putting down in black and white what goes on in my mind in forming an opinion as to a proper rate of return. You have to give consideration, in forming such an opinion, to what yields exist on other natural

gas company bonds, to what other natural gas company stocks are doing, and you have to give consideration to a great many things. These exhibits simply put down in black and white what I considered points which were deserving of some emphasis as being among the things considered in forming this opinion.

The rate of return to which I have testified does not include any part of the amortization required. That minimum of 8 percent is based on the assumption that the proper provision for amortization or return of the capital investment will have been made. If the period of amortization be over the entire period of the indicated life of the field, an investor would want his 8 percent during the time his funds were used, but at the same time he would want to be assured that those funds were returned to him when the project was finished. If in fact 15 years is the life of this project, he would want to have his funds returned to him at the end of that period. If the project lasted only 12 years, it is obvious that he will lose a part of his investment.

From a practical point of view an investor would demand that the period of amortization under regulation be less than the life of the project as expected at the time he made his investment, in order to provide a factor of safety. If at a later time it is found that the project is going to last longer, the amortization could be changed at that time with no loss to anybody. If, however, the amortization is extended throughout the indicated period and not over a shorter period, there is a risk there. If the organization is set up under regulation on a 15 or 16-year basis, and actually works out to be only a 10 or a 12-year proposition, the investor will lose. Therefore, the investor before he goes into the thing will demand some compensation for that risk. I have included that element of risk in the 8 percent I named as the rate of return.

The Northern Natural Gas Company bonds to which I have referred were for a period of 12 years, and represented only 40 percent of the total capital value. The Equitable and the other companies fixed the maturity. We would not buy a bond with a maturity of more than 12 years. We had the engineers' reports which indicated a life of from 15 to 20 years, but we insisted on setting them up on a 12-year basis because we wanted to play safe. That was in 1935.

Cross-Examination by Mr. Booth.

I have not stated and certainly not at any one place all of the factors of the exhibit I produced here in arriving at my judgment as to what constitutes a proper rate of return for defendants. Rather than to undertake to answer your question as to whether or not I considered any other factors to which I attached any significance, I would rather mention right now the factors which I have taken into consideration in forming my opinion so as to have them in one place. I have not in any one place here
1112 enumerated the factors which I have taken into consideration, and I did not wish to reply to your question, "Are there any other factors that you have given consideration to," without thinking the thing through very carefully and giving careful consideration to all of the factors that I have considered, and I will be glad to name them right now.

In forming my opinion as to a proper rate of return for a company such as defendants, I gave consideration to such matters as the financial history of the company, the record of operations and earnings extending over a period of time from the time it became a going concern up to the end of 1938 and through the middle of 1939. I gave consideration to all of the facts which I determined in my investigation of the company from its records, and a physical inspection of the properties, such as its supply of gas in Texas, its sale of gas in Chicago under contracts. I gave consideration to the investors' appraisal of the natural gas industry, and I gave consideration to the present day financial conditions, the state of the money market. I took into consideration the returns which are available to investors in other businesses, the fact that these companies are now regulated or at least the rate case is in progress, and of course I took into consideration by general background and knowledge of the public utility business and the natural gas business extending over a substantial number of years. I may have left some factors out of that statement—it is not always possible to sit in the witness chair with questions thrown at you and detail a long list of things that you took into consideration. Certainly, I took all of those things into consideration, and there may have been some of the minor ones that I should have specified, but I think that they would fall into the

general category of the conditions of the general money market and the demands of investors. I referred to risks of the natural gas business and to the possible failure of the line and the shortening of the life of the operations as one of these risks. I have said that I included among my considerations such matters as the risks inherent in the natural gas industry. I have given consideration to that circumstance as one of these risks. I spoke of the possibility of the shortening of life and possible over-estimate by geologists as to the life of the company. I also referred to rising costs as a possibility and the possibility of taxes on natural resources and the absence of control over the markets.

As to what I meant by the latter statement, any natural gas company which has control over its market through the ownership or control of the distribution facilities is, in my opinion, in a much stronger position from the point of view of the investor than a company which has no control over its markets.

In response to questions by counsel for defendants I pointed out the degree of risk attending companies like defendants and that it would be higher in a case of a company that was solely a natural gas production and transmission company than in one which had an integrated system, owning distribution facilities as well. I assumed, of course, that defendants have no control over the market because they own no distribution facilities. I am familiar with the situation under which defendants operate and I am saying that the conditions under which they operate tend to make it a more hazardous enterprise than if it controlled its distribution. I have attached a somewhat higher risk to the business of Natural Gas Pipeline Company because it does not own the distribution facilities in the City of Chicago and the adjoining cities in northern Illinois and does not control the market.

1113 I have not said that they have no control at all over their market. I know that defendants have contracts with Chicago District Pipeline Company.

In arriving at a proper rate of return for defendants, I have assumed the facts as I found them out.

I assumed that defendants had no control over the market as I have been using that term in my previous testimony, thinking of ownership of distribution facilities and in no other manner, and I attach a higher risk to the

business and operations of defendants in arriving at my judgment as to what constituted a proper rate of return than I would have, had defendants owned the distribution facilities which were ultimately used in the supply of gas to the consumers. The bulk of defendants' gas is sold to Chicago District Pipeline Company as the first purchaser. The largest purchaser from the latter is Peoples Gas Light and Coke Company.

I have, among my papers here, the complete breakdown of taxes in Illinois and other states, paid by defendants. My memory is that the taxes paid to the State of Illinois are not large. In comparison to the size of the enterprise and its gross operating revenues, the ad valorem taxes paid in Illinois are relatively small—$40,000 in 1938, out of total taxes of about $629,000 paid by Natural Gas Pipeline Company for that year. The latter amount included ad valorem, federal income and other taxes.

Redirect Examination by Mr. Morgan.

I considered all of the risks that I discussed in my testimony in arriving at my opinion on rate of return. I certainly meant to include all of the factors which I had mentioned as I proceeded with my testimony from the very start, when I attempted within the limits of my memory to summarize them. I wanted to have this summary in one place and have it clear that when I enumerated the factors that I had taken into consideration, that I had not left out things that I really should not have left out.

Questions by the Examiner.

As to the weight I gave data shown on pages 6 and the following of Exhibit 150, in arriving at my conclusion, I certainly could not say what percentage I gave it. I think really all of that data in that section of the exhibit, as well as all of the exhibit, puts down in black and white, and under convenient headings, information which is available, and must be available to anybody in forming an opinion of this kind. The person considering the subject would roll this data around in his mind and give it the weight which he felt it deserved in arriving at a judgment figure. He would not have to know more about the industries which I have classified there before he could do that.

That particular list on those pages is a very, very large cross-section of American industry. I wish to make it clear that in reaching an opinion that 8 percent is a proper rate of return of this company, I am not influenced
1114 in any way by the fact that the steel industry or the automobile industry, say, earned 15 percent and consequently that there should be a tendency for a higher rate of return. I have not been influenced by any individual industrial classification, or the fact that profits were particularly large in particular industries or lower in other industries, but it was interesting, and I think of some value, to have before me a whole review of American industry showing what invested capital is earning over a period of years.

It is valuable for trend purposes, because you can see there, for the years 1934, 1935, 1936 and 1937 what happened in those years. 1937 was the year of business recovery and profits, generally speaking, were larger. As to whether I consider a 4-year period as here selected to be a good trend period, I do not think so. I could only select the 4-year period because these reports were data which were originally taken from the Securities and Exchange Commission reports, and that Act only became effective in the year 1934, so reports under the substantial breakdowns which are required for that particular kind of a tabulation only became available to the general public as of that year. From that point of view that is the best that we could get.

If I am to express an opinion as to whether principal or minor weight was given to the gas company studies shown in the same exhibit, a greater weight would, of course, be given to the statistics of the gas companies because those are the companies which are most nearly comparable to defendants. I do not mean to say that I did not give any particular weight to these other industrial classifications. If I had not, why should I bring the exhibit in?

I am familiar with the Federal Communications Commission publication of June 15, 1938, with special reference to the Long Lines Department of the American Telephone & Telegraph Company and with the observations made in that study. I think it is one of the best works on rate of return that has ever been produced. That is my bible, as far as that is concerned. I wish to make this observation, though: That that particular study was prepared by the Communications Commission with reference to establishing a proper rate of return for the Long Lines Department of the Amer-

ican Telephone & Telegraph Company. I think every one of us will admit that the Telephone Company has an absolute monopoly, to the extent that there is anything that is an absolute monopoly,—a real monopoly in communications service. To that extent it was perhaps proper that any comparison should not include any such things as industrial companies, but defendants are really primarily industrial companies who are in competition all the time with other fuels, such as oil and coal.

The Telephone study, except for one or two indices of that kind, did not go outside of the field of regulated enterprises. I feel, however, that it is desirable and necessary to go outside of that field in the case of defendants, because I feel that it is a different kind of an industry than industries which are primarily monopolies.

It is obvious that the rate of return for a single industry, contained in that list on pages 6 to 15 of Exhibit 150, is meaningless. In the case of the beverage industry, which shows an average return of 47 per cent, one company in that classification, namely the Coca Cola Company,
1115 makes a large return and overshadows the industry as a whole. Similarly, you will find that in certain years other companies have made very low returns. All that the exhibit does is to show the rate of return for a very, very large cross-section. I think that some significance should be given to the average down at the bottom, and perhaps leaving out any individual industrial classifications.

The fact that this data on page 6 of my exhibit did not show what the investor is now getting by way of return on his investment, but merely a rate of return on the capital invested, which may have been invested years ago, does not affect the use of these figures, in my opinion. It is obvious from the heading on my exhibit and from the studies themselves that it is a return on invested capital, which may have been invested years ago. I would still use those figures for reference purposes because it is useful to know what capital is earning. It would be more useful to know what capital which is being invested today is earning or getting on its investment, if it were possible to obtain such data in as comprehensive a way as that information is set out in the exhibit. That would certainly be another measure. I would say it would have at least equal and perhaps greater value.

(At this point EXHIBIT 150 was received in evidence over the objection of counsel for each of the Commissions, to whom the Examiner allowed exceptions.)

Redirect Examination by Mr. Morgan Resumed.

In stating, in reply to questions by Mr. Booth, that in appraising the risks attendant upon the investment in these companies, I asumed that they have no control over their market. I understood that they have contracts with the distributing companies who market the gas to the ultimate users. I so stated at the time and in saying that I assumed they had no control, I meant they had no such control as was not given them through operations of their contracts, of course. I was differentiating between the control which comes through ownership of distribution facilities as distinct from these companies which have contracts for the sale of their products. I was talking about the retail marketing policies of the distributing companies and all of the other things that are within the control of the companies which sell to the ultimate consumer at retail.

Recross Examination by Mr. Booth.

I have said that in arriving at my judgment as to the rate of return, I regarded that these companies are a riskier enterprise than would be the case if they owned the distribution system; and, in arriving at my judgment, I assumed that they had no control over the market, except such as they acquired through the contracts for the sale of their gas. These contracts do not give control over the markets in the sense that I was using the word "control". As I was using the term, I mean the company which owns the distribution facilities and sells the gas at retail to the public, and in that sense controls his market. I did not say this morning that I considered the fact that defendants had this contract with Chicago District Pipeline Company was of no significance. I gave consideration to the terms of the contracts under which gas is sold, the length of the contracts and the prices at which it is sold. These, I think, are the principal factors concerning those contracts. I have not said those particular factors increased the risk of defendants. If a company had no contract whatever, and was simply selling its gas on a day-to-day basis, the prop-

1116 osition would be much riskier than that of defendants.

They are in a much better position than a company that would have a day-to-day or a month-to-month contract. And I considered that on the whole the relations between defendants and Chicago District Pipeline Company had the effect of increasing the risk over that of a company that owned its distribution facilities.

The fact that these contracts were for 15 years from the date they were written, with a privilege of extending for 5 years on the part of defendants, reduces the risk from that of a company which operates on a day-to-day basis. I know of no natural gas pipeline company that operates on a day-to-day basis. In arriving at my consideration of the risk, I took into consideration all of the terms of the contracts which I read. I should hate to state from memory the terms of all the contracts. I have stated what I consider to be the principal features, the life of the contract and the rate at which the gas is sold. There are many other provisions in those contracts with reference to the adjustment of the contracts, taking care of the impurities of gas, and all sorts of things. The principal factors which I took into consideration in those contracts as affecting the risk were the terms and the price at which the gas was sold.

I testified that 8 percent was the minimum rate of return for defendants. This I consider a proper or reasonable rate of return for defendants.

1117 H. B. DORAU, a witness for defendants, testified:

Direct Examination by Mr. Morgan.

(October 4, 1939)

My name is H. B. Dorau. I reside at Ridgewood, New Jersey. I am professor of economics at New York University and chairman of the Department of Public Utilities and Transportation in the School of Commerce of that university. I lecture in courses in public utility economics and courses in property valuation. I also conduct graduate seminars in public utility problems and in economic theory in the Graduate School of Business Administration. I came to New York University in 1931 and have been teaching public utility courses in that university from that time down to the present.

Prior to that time I had been professor of economics in Northwestern University, teaching courses in public utilities and directing the research projects in public utilities conducted by the Institute for Economic Research at Northwestern University School of Commerce. I was on the faculty of the School of Commerce of that university from 1925 to 1929 in which year I was granted a leave of absence to engage in economic consulting work for investment banking firms. My leave of absence was extended for a second year to 1931.

During that two-year leave of absence from teaching and research I had a variety of experience as consulting economist in connection with investment and financing proposals.

Prior to my tenure at Northwestern University I taught as a member of the Department of Economics at the University of Wisconsin from 1921 to 1925. That was my first teaching appointment.

I graduated from Lawrence College, Appleton, Wisconsin, in 1919 with an A. B. degree. I did my graduate work at the University of Wisconsin from 1919 to 1923 and was awarded degrees of Master of Arts and Doctor of Philosophy by the University of Wisconsin.

I have always engaged in business and government consulting work to the extent that my university appointments permitted. My first employment came in 1920 when I was retained by the public utility acquisition committee of the Common Council of the City of Milwaukee. My special responsibility was to determine the probable cost of capital to the City of Milwaukee should it acquire the electric business, and compare that probable cost with the experienced cost of capital to the private company serving the city. That was a study to determine the annual value of capital in the employment of the public utility business under two forms of ownership. I would say it was in the nature of a rate of return study.

1118 I have made a number of investigations of the cost of capital to regulated enterprise. I made an early study of the cost of capital for public service enterprise which was published in the Chicago Journal of Commerce in 1923. I initiated studies on the cost of public utility financing in 1925 which were published in the Journal of Land and Public Utility Economics and which studies have been kept up to date by myself and others since that time. I have published comprehensive articles on the changing

cost of public utility capital. I made up a detailed study on the cost of capital experienced by the railway industry under the operation of the Transportation Act of 1920 which study was presented to the American Economic Association in St. Louis in 1927 and subsequently brought up to date and published in various banking and economic journals.

I have appeared as a witness in the field of public utilities before regulatory bodies on a few occasions. I have appeared before the Interstate Commerce Commisison, before the Illinois Commerce Commission, before the Pennsylvania Public Service Commission, and have acted as consultant from time to time for the Board of Public Utility Commissioners of the State of New Jersey. I have been responsible for the presentation of economic briefs and analyses in connection with a consirable number of public utility cases on which I did not appear as a witness.

I have written textbooks and other published articles in the field of economics and public utilities. I have here a list of those publications and books which I do not pretend is comprehensive or all-inclusive, because my memory fails me on a great many of these things. I have never had time to keep a scrap book and record everything that I have done. The list includes:

Dorau, H. B. "Public Utility Financing, 1919-1925," Journal of Land and Public Utility Economics, July, 1925.

"Public Utility Financing, A Review of 1925," Journal of Land and Public Utility Economics, April, 1926.

"The Cost of Railway Capital under the Transportation Act of 1920," American Economic Review, March, 1927. Journal of Land and Public Utility Economics, February, 1927.

"Northwestern University Responds to the Demands of an Important Business," American Gas Association Monthly, March, 1927.

"The Rise and Decline of Municipal Ownership in the Electric Light and Power Industry of Wisconsin," Journal of Land and Public Utility Economics, May, 1927.

"Municipal Ownership in the Electric Light and Power Industry of Massachusetts," Journal of Land and Public Utility Economics, August, 1927.

1119 And Alexander Marjorie. "Some Measures and Measurements of Telephone Utility Taxation," Journal of Land and Public Utility Economics, November, 1927.

"Gross and Net Earnings of Public Utility Enterprises Exclusive of Steam Railway, Telephone and Telegraph Utilities, 1913-1926," Journal of Land and Public Utility Economics, February, 1928.

"Appliance Merchandising Policies and the Future of Gas—Should the Gas Company Set the Standard for Appliance Selling in the Territory Served with Its Products?" Gas Age-Record, March 3, 10 and 17, 1928.

"Merchandising as a Factor in the Gas Industry," Gas Age-Record, June 16 and 23, 1928.

"Cost of Railway Capital," Journal of Land and Public Utility Economics, May and November, 1928.

"The New Competition—How to Meet It," American Gas Association Monthly, December, 1928.

"Cost of Railway Capital," Journal of Land and Public Utility Economics, May, 1929.

"Railroads' Command of Capital," Investment Banking, August, 1931.

"Some Alternative Bases for Public Power Projects," The Southern Economic Journal, April, 1938.

"Dispersion of Prices for Domestic Electric Service," Public Utilities Fortnightly, June 9, 1938.

"Rates in the Electric Industry Under Municipal Ownership," Annals of the American Academy of Political and Social Science, January, 1939.

"The Impact of Economics on Accounting," Edison Electric Institute Bulletin, January, 1939.

"The Outlook for Public Utilities," Trusts and Estates, January and February, 1939.

Books and Pamphlets.

Dorau, H. B. and Hinman, A. C. "Real Estate Merchandising," A. W. Shaw Company. Chicago and New York. 1926. Pp. 363.

Dorau, H. B. and Hinman, A. G. "Urban Land Economics." The Macmillan Company. New York. 1928. Pp. 570.

Dorau, H. B. "The Changing Character and Extent of Municipal Ownership in the Electric Light and Power Industry." The Institute for Research in Land Economics and Public Utilities.. Chicago. 1929. Pp. 102.

"Materials for the Study of Public Utility Economics." The Macmillan Company. New York. 1930. Pp. 975.

"Some Economic Considerations Bearing on the Place and Significance of the Holding Company in the Organization and Functioning of the Public Utility Industries." Submitted to the Committee on Interstate Commerce of the United States Senate. May 1, 1935. Pp. 24.

"Agriculture" in Spahr, W. E., and Others. "Economic Principles and Problems." Farrar and Rinehart, Inc. New York. 1936. 3rd ed. Vol. II. Pp. 446-486.

"Economics of Public Utilities" in Spahr, W. E., and Others. "Economic Principles and Problems." Farrar and Rinehart, Inc. New York. 1936. 3rd ed. Vol II. Pp. 490-530.

"Land" in Spahr, W. E., and Others. "Economic Principles and Problems." Farrar and Rinehart, Inc. New York. 1936. 3rd ed. Vol. I. Pp. 196-222.

"Control of Public Services" in "Planned Society, Yesterday, Today, Tomorrow." Edited by Findlay Mackenzie. Prentice-Hall, Inc. New York. 1937. Pp. 989.

Editor or Editorial Supervision:

Lagerquist, W. E. "Public Utility Finance." A. W. Shaw Company. Chicago. 1927.

Bailey and Knowles. "Public Utility Accounting Procedure." A. W. Shaw Company. Chicago. 1928.

That list shows the books or publications of which I was the sole author and also those of which I was co-author or joint author. My responsibility in connection with each is clearly stated in the list.

In some instances I edited these publications and was not the original author. Editing a publication involves a wide range of responsibility,—sometimes a very considerable responsibility in the selection, rejection and arrangement of material and sometimes less responsibility. I merely mention two here because they are rather closely related to the field with which we are concerned, namely, Lagerquist on Public Utility Finance, which I subsequently edited for publication, and Public Utility Accounting Procedure by Bailey and Knowles, which I took a hand at arranging or improving for publication.

1121 I have been asked to make an investigation of the factors influencing the necessary rate of return to which defendants in this proceeding are entitled. To the

best of my recollection I was employed in the beginning of April, 1939. I have not kept a clock record of the time devoted to the gathering of information and the development of my conclusions in this matter. That is impossible with the conditions under which I work, but I have devoted a very substantial part of my time since that date to special consideration of the question of the necessary rate of return for an enterprise of this character. I have had the assistance and advice of my associates in the Department of Public Utilities of New York University and others trained and qualified by experience to participate in statistical and economic investigations of this character. I have had the aid of qualified economists, statisticians, lawyers and engineers in the work of assembling information and determining quantitatively and statistically the facts upon which I base my opinion.

I have directed the work of all those who have contributed to that study and their work has been done under my immediate supervision. I have kept up with it as to progress.

The word "return" to my mind refers to that part of the revenue of an enterprise remaining after the deduction of necessary operating expenses including rents, taxes and provision for accruing depreciation, but before provision for interest, dividends or other appropriations which in one form or another constitute compensation for the employment of capital. The return may thus be designated as the "wages" of capital, or more appropriately the return available for all the providers of capital for the various economic functions which they have performed.

There is no provision in the "return" as I am using that term here for the return of the capital through depreciation or amortization or some such provision. I consider provision for depreciation as an appropriate operating expense which has to be deducted from the revenue before you arrive at the wages of capital.

There is a distinction between return on capital and the return of capital in an economic sense. The capitalist requires an annual wage on the capital and looks forward to the ultimate return of his capital. Therefore I would say that the provision for depreciation represents the anticipation of the return of capital, and therefore should not be included in the calculation of the

return on capital. Capitalists are simply of that variety who expect a return of their capital as well as a return on their capital.

Here I am speaking of the return on capital only being determinable after adequate provision for accruing depreciation. The wages of capital to which I referred a while ago are received by the enterprise which engages in the business to which attention is being directed. What I mean to imply is that strictly speaking the security holders won't receive the return. The security
1122 holders receive their respective shares out of the sum which constitutes the return on the capital of the enterprise in whose securities they may have invested. They receive a return according to the particular contract on which they may have invested or engaged their capital. I also mean to imply that it is my opinion that security holders as a whole viewed separately rarely receive the whole return which the enterprise may receive. There are generally charges and adjustments to be made which cannot be made in any other way except subsequently against the amount which was earlier thought of as part of the return. Consequently, I would distinguish between the security holder's return and the return receivable by the enterprise as such, because as a matter of historical fact, the security holders rarely receive the whole return allowed to the enterprise.

What I meant to call attention to was that the amount calculated or anticipated as the return to the enterprise is rarely the amount which the security holders as a whole receive in compensation for the performance of their economic functions.

From the standpoint of an economic analyst it makes no difference as to the rate of return to which an enterprise is entitled whether its securities be in the form of bonds or preferred stock or common stock, or ordinary interest-bearing indebtedness like that to banks. The fact that some capital is compensated on a contractual basis in the form of bond interest, and other capital is compensated by an agreement among stockholders that some shall be preferred over the other classes of stockholders, does not make any difference. I do not conceive the problem of the return determination to be confused by the nature of the capital bargain made among the various classes of security owners. That is a bargain

which they make with each other among the groups represented. There is a difference between the earned return and a return to be earned. The return earned is of course a historical fact subject to determination within the limits of accuracy of accounting and statistical devices. It is something that has occurred and is in distinct contrast with and a very different sort of thing than the return to be earned, which is the question arising in connection with a rate case. Thus, one is an established past fact; the other is a presumption or an opinion, a judgment or anticipation, and since the past and future are very different, and since estimates and expectations and past established facts are different, they are two very different quantities and two entirely different concepts, in fact.

The return is ordinarily understood to be the product of the rate base multiplied by the fair rate of return. Thus, while the return is a number of dollars and is the ultimately important fact to be determined, it is only ascertainable by applying a previously determined rate of return against a previously determined rate base.

The return is ordinarily expressed as the rate of return applicable to an annual period because the year is the unit of accounting and financial record keeping, and therefore it is convenient to express it as a return in a year. A return of 8% then means 8% of the rate base each year. By the expression "fair return" or "reasonable return" I would say that it means the income on the value of the capital employed which in the best opinion and judgment is necessary to fully compensate the capital employed for all the necessary economic functions performed by its investment in a given enterprise under a given set of circumstances. The use of the word "fair" is meant to imply the dependence on judgment and opinion since it is a future fact which is being estimated.

A fair return in my opinion cannot be ascertained with the same degree of precision as can a past return because the latter is an experience and the former is an expected fact. Since the one involves judgment and imputation for the future it can never be hoped that it will be precise to the same degree that an experienced fact is. The necessary return as distinguished from the rate of return is never directly determinable. The return is the product of the

multiplication of the base value by the rate of return. Neither rate base nor rate of return is an ultimate end but on the contrary they are but the indispensable means to the important end, namely, the return stated as the number of dollars.

I am not prepared to offer any opinion on the rate base. In my study concerning the rate of return I assumed that the rate base is going to be determined and since the rate base is not as yet determined I cannot determine the return as such. All I can concern myself with is the rate of return which will have to be applied to some rate base out of which the ultimate fact which interests all parties, namely, the return, the number of dollars, will have to be derived.

I have made a study of the records and the facts concerning these two companies and the character of business in which they are engaged in an attempt to prepare myself to the best of my ability concerning this subject of a rate of return here.

I have devoted my study and am prepared to testify here concerning that subject only. It is essential in order to obtain a fair return for an enterprise to have both a fair rate base and a fair rate of return. The presumption is that if the return, namely, the number of dollars, which is the vitally important thing, is to be fair or to be arrived at at a figure which would be deemed to be fair, then the two calculations which are necessarily previous to that determination would presumably also have to be fair.

In approaching the subject I tried to make the distinction between ascertaining the return actually earned in some past period, and ascertaining the return deemed fair or necessary for some future period. I should like to make the distinction again between ascertaining a past return and a present or future return to the effect that one
1124 is the ascertainment of a fact. I say that because I want to make it perfectly clear that determining the necessary return for the future involves the process of valuation. It is unavoidably an imputation process, since even identical past transactions do not establish what the necessary return shall be for the future. It is an imputation process even more remote than that which is engaged in when the owner of a thousand bushels of wheat imputes a value to it based on yesterday's price at which some other wheat was sold. The process of determining a fair rate of return is the same as determining the fair value for rate

base purposes. It involves the gathering and selecting of evidences and the passing of judgment as to the significance and weight to be attached to each form of evidence.

In my opinion the appropriate evidence of the necessary return is the present annual value of capital under the conditions under which it would now be employed. It is assumed that the return to be determined is the presently necessary return. This in my opinion is the common understanding and apparently the law of the land. The question is not how much of a return was necessary five years ago or how much of a return may be necessary five or ten years hence, but what are the necessary present annual wages of capital under the circumstances of employment were the enterprise to be undertaken today. The use of present annual value of capital is entirely in harmony with the use of the present capital value for rate base purposes. Thus, the sum to be determined is the present necessary supply price of capital under the conditions which enterprising capital would face were it considering committing itself to this kind of employment today. I mean to say that the fact to be determined is at what prospective return would capital employ itself if a given enterprise were initiated under present day conditions. It is my understanding that experienced money cost refers to the price at which a given enterprise actually was able some time in the past to secure the capital which it now commands. I understand present necessary supply price of capital to mean the price at which such an enterprise could now expect to command the capital necessary to establish itself under present conditions.

In my opinion the experienced past cost of capital of a given enterprise has nothing in particular to do with the present annual cost of capital employed. The experienced money cost of an undertaking may have been higher or lower than the present annual value of the capital employed under present conditions. If the experienced money cost is recent and the conditions of capital employment have not significantly changed, experienced money cost may be significant evidence of what the present annual value of capital under given conditions of employment would probably be. Since all valuation consists of imputing a money-worth to goods which actually are not being exchanged, it is necessary to seek and appraise the evidences of value in the absence of such adequate market demonstration. The evidences of value, in my opinion, with respect to rate of return and with respect to other valuations,

do not have equal significance at all times. Apparent evidences may have no real significance at some other
1125 times. Thus, it is possible that the past experienced cost of capital does not reflect even as of that date the annual value of the capital employed. In the case of the Natural Gas Pipeline Company of America it appears that there was no public bargaining for the capital, that the yield on the bonds at the offering price was nominal, since equity ownership and residual claimant interests purchased these bonds. In such absence of any bona fide market transactions for this capital the nominal apparent experienced money cost, in my opinion, loses all significance.

The experienced money cost and the required return are not at all necessary on the same level. The lapse of time between one bargaining and another would very likely introduce changes which would make the present annual value different from the experienced cost of capital even if the experienced cost were a bona fide reflection of arm's length bargaining for capital.

(October 5, 1939)

They are not only not necessarily on the same level but they are rarely on the same level, because we are living in a dynamic economic society in which those relationships are continually changing.

To the fact that a company had succeeded in issuing bonds that would yield to the investor 6 per cent back in 1931 or 1932 I would attach no particular significance. In the first place that is seven or eight years ago. There have been significant changes in economic relationships during that period. Furthermore, I would want to know under what conditions and circumstances those bonds were issued at that time, particularly whether or not they even reflected with any degree of accuracy the market's valuation of that kind of a return at that particular time, and quite obviously whether it was an arm's length bargain. In other words I would want to know that it actually reflected, even as of eight years ago, the capital market conditions for such capital as may have been acquired under the conditions then existing; that it even had the essentials of an index of the value of money as of that time.

I think it is important to recognize that the present necessary supply price of capital is not a single homogeneous form of economic compensation. From the accountant's point of view and from accounting records it would of course appear to be such, because it is regarded as a num-

ber of dollars of income, or viewed as a number of dollars of income to be obtained; but when you approach the problem of an economic valuation of such a return it is necessary to recognize that it is made up of a number of non-homogeneous elements, each of which is subject to influences peculiar to itself. That these various elements cannot be too accurately identified or segregated from the whole is in my opinion no excuse for failure to recognize that they exist. I think this is particularly important when dealing with a peculiar industry and it is also important when dealing with an industry having peculiar and unusual circumstances, because not only are you faced with the problem of recognizing the fact that there are in the so-called return a number of non-homogeneous forms of reward, but that the relative importance of these various elements changes from time to time, and that under one set of economic conditions one of the elements may be much more important both relatively and absolutely than it would be at another time. These components can be broken up in a number of ways. For the purposes of my own thinking I like to break them up into two parts initially, one of which we may define or consider as loan interest and the other as that amount over and above loan interest which constitutes the necessary inducement to enterprise in the form of rewards over and above what loan interest would be in such an undertaking.

1126

As every one probably knows, loan interest itself is far from a homogeneous form of compensation. Any effort at more accurate and refined appraisal would envision the elements that go to make up loan interest. Thus we recognize in economics the primary element of pure interest. We recognize also that there is in loan interest a risk premium. It ought to be recognized that there are over and above risk premiums certain compensations for uncertainties which are really not of the nature of risks. There is I believe in a great many interest loan contracts a fourth element, namely, a necessary compensation for the performance of the work of watchful care and attention to the investment.

Pure interest is of course an economic conception of a portion of the loan interest. I consider it the most fundamental but it is by no means quantitatively the most significant. What is important in the first instance to understand is that this pure interest is not synonymous with and never measures the loan interest rate. In economic science

pure interest is understood to be the market value of time preference. It measures the difference between the present value of the future gratifications and the present value of present gratifications. Thus pure interest, assuming the freedom of capital to move and assuming the absence of other restricting factors, would tend to be the same at a given time and place with respect to a given people, irrespective of the field of employment.

Therefore, it is not a difference in pure interest which would call for a decision as to the comparative relative rates of return to be allowed in different kinds of undertakings. The movements of pure interest rate are difficult to trace and never express themselves in the form of a market price. When the loan rate of interest, for example, changes it is not necessarily any evidence that the pure interest element has changed because the loan interest rate may be changing on account of the change in other factors. In fact we have reason to believe that the pure interest element does not change violently from time to time, that the people's disposition to prefer present over future gratifications does not fluctuate widely as the yields on contracts at loan interest fluctuate, for example.

In my opinion there are no loan contracts of any character whatsoever which accurately reflect pure interest. Moreover, I believe it is an error to assume that the yield on government bonds reflects pure interest. Government bonds play an important part in our monetary system.
1127 They serve several special and unique functions as investments for the funds of commercial banks and moreover they enjoy a peculiar market because of the confidence that the people have in the government and the efforts which the government makes or has made in recent times to maintain a market in these bonds.

Moreover, to say that the yield on government bonds reflects pure interest puts us in a dilemma because we find government bonds yielding different rates of interest from a fraction of one per cent for short term obligations to in excess of two and approaching three per cent on other obligations. So if one were to say that the yield on government bonds reflects pure interest one would be put in the position of saying that there are many different rates of pure interest. The fact is that people buy government bonds, in my opinion, at prices which frequently sacrifice a portion of pure interest in order to obtain something which they consider of more value than the pure interest at the

particular moment, namely, liquidity, the putting of one's self in the position to quickly withdraw from a given security and to be able to buy at another opportunity when the attractive time comes around. Government securities have, in my opinion, yielded less than pure interest under many circumstances.

There are many illustrations of the same kind of behavior. When people purchase common stocks where there is no present return and possibly no early expectation of return they are sacrificing an immediate return and balancing that off against future expected compensation. Because of accounting conventions we get in the habit of using the year for such calculations and for many investments the year is a perfectly arbitrary measure for such calculations. People usually envision a period of time and expect that in that period of time they will get a full and adequate compensation.

Take another illustration. A man who buys a vacant piece of land and is shown not to receive any return or any rent for a period of five years. I think it would be entirely inappropriate to use that as an illustration that people are willing to invest in land at no return. A piece of land that is expected to appreciate affords another illustration. It is common knowledge that when buyers and sellers get together on the price of a piece of land which it is understood is likely to appreciate, the ratio of available income to the price paid is very low, because the investor in that kind of an opportunity envisions the annual return plus the incremental or changing return will compensate him fully.

Years ago some interesting studies were made of farm mortgage rates and farm earning rates in the State of Iowa. It was surprising to find that the farmers were apparently paying a mortgage interest rate in excess of their current earnings rate. The paradox, however, was resolved by an understanding of the fact that they had gone through a period of rapid appreciation of land values and that they were envisioning a total gain in the value of the estates plus the current return which would be fully compensatory. The point is that the total return expected is not necessarily embraced in the current rate of return.

1128 *Cross-Examination Interposed by Mr. Slaff.*

"Pure interest" is not the return on a riskless loan as that term is viewed in economics. The effort is made to identify it with the differential existing in human being's

valuations of the future and present gratifications. Insofar as they have notions of risk that enter into that calculation they would probably act differently than this pure conception of a distinction between present and future gratifications. For the purposes of the analysis which I propose to make, and in the usual method of thinking, we conceive pure interest as not including any compensation for the assumption of the risk.

As to whether I define "pure interest" as return on a "riskless loan" as you say Mr. Delafield did, I think I have answered you when I said that the conception of pure interest is the reward and compensation for pure time preference and not for any other element or any other function or the assumption of any other economic burdens. Thus by implication, my earlier answer seems to point to the fact that risk and uncertainty and the other elements are to be recognized as independent of this factor.

Direct Examination by Mr. Morgan Resumed.

There is no such thing as a riskless loan; consequently I am unable to compare those two things. Pure interest would more nearly approach the yield on as near to a riskless loan as one might be able to envision. I am perfectly aware that it is common practice to make reference to what are considered the most secure types of loan contracts as a reflection, but in a more refined analysis I merely want to point out that that is not strictly accurate and true.

The fact is that people are willing to sacrifice their entire valuation of time preference under some circumstances in favor of liquidity or in favor of security. Thus, the people who have maintained their purchasing power intact, in spite of inducements of any sort during the period of depression, were sacrificing the total of their valuation of the time preference in favor of the other things that they could only get by making that sacrifice. That does not mean that these people are bereft of any time preference. It simply means that they are willing to sacrifice and take the greater gain or choose the lesser loss under the circumstances they face. In other words, pure interest in its relation to the interest on a riskless loan would approach the latter when there are no other considerations than interest involved in the investment.

The observation I made with reference to government bond yields during periods of low economic activity to an

extent applies to all high grade bonds. It is a practical observation drawn from the financial markets that those bonds which most nearly approach in security the position of government bonds are rather quickly influenced by the changes in government bonds. Exceptionally well-secured loan contracts of every character, maybe bonds, and the highly protected private securities, all represent what one might call a sort of bomb cellar to which capital retreats in periods of economic distress.

1129 As I pointed out, it is common knowledge that a great deal of capital prefers to remain totally liquid in times like these, receiving no loan interest at all rather than commit itself to any fixed obligation. There even have been periods in history when the indicated market interest rate appears to have dropped to zero and it is reported in earlier economic history that at times people even have paid interest for the safekeeping of funds under conditions of great hazard or great uncertainty. Thus, the phenomena of what we refer to as negative interest.

It is not reasonable, in my opinion, to assume that just because people choose the greater loss or the lesser gain at such times that they lose their sense of time preference. I think that such extreme illustrations merely illustrate the fact that pure interest return will be sacrificed at times in favor of other elements for the return. Thus the yield on high grade bonds tends to a considerable extent to be inverse to the necessary reward for the assumption of risks and uncertainty and the assumption of entrepreneurial responsibility,—lowest at the time when there is the least disposition to be enterprising and rising promptly when the possibility of gain commensurate with risk, uncertainty and enterprise appears. This in rather recent weeks has again been rather dramatically emphasized by the quick flight of capital from these economic retreats or bomb cellars to liquidity in the hope that the war situation would bring on an opportunity for enterprising capital to earn that kind of a return.

"Enterprising capital" is a general term which I use to imply capital which is interested, willing and able to assume some of the risks, hazards, uncertainties and even an entrepeneur position in industry. You would distinguish that kind of capital from the kind that insurance companies have, for example, which they are restricted in that instance by law from employing in that way. You would distinguish it from the type available with savings banks, the type ad-

ministered by trustees. You would distinguish it from the estate of those who are wholly and totally dependent upon certainty of return for what funds they may have to protect them in old age or otherwise. It is the capital which is in a position to be utilized, either legally or economically, by virtue of the amount of money which the individual has or the position that he finds himself in with respect to the assumption of risks and uncertainties which would justify him in not merely employing his capital to equate time preference, but to assume some risks and hazards even to the employment for the support of the entrepreneur in a business engagement.

It is a matter of common knowledge that different types of loan interest contracts require a varying amount of the investor's attention and consideration. Obviously in the face of this fact the investor would avoid that type of commitment which would require his continuing attention and concern unless that type of commitment promises to yield somewhat more than a commitment which did not require that amount of attention. I think a good illustration is again found in the old-fashioned real estate mortgage investment which requires a great deal of capital management. It was usually necessary to give attention to
1130 investigating the property and the security. Following that it was commonly necessary to write once or twice about collecting the interest. Then you had to see to it that the insurance was kept up on the property and that the taxes were paid, and when you got all through and received your 6 or 6½ per cent return on the farm mortgage, which was probably very well secured, you undoubtedly had earned a fairly decent wage for the management of your capital, all of which was pretty effectively disguised as part of the loan interest rate. If you need any more evidence that there is an appropriate valuation to be attached to that kind of a function, we need only observe that there are commercial agencies, banks, trust companies and others who assume to perform the function of capital management and charge you a right handsome fee for it.

The cost of capital management is the amount received by the holder of the contract and is the amount paid by a business enterprise. I am not talking about any function performed by the agents of a corporation or business in whatever they may do to manage the assets of that enterprise. I was talking about the amount of care and attention which the owner of the securities had to give to cer-

tain types of securities as compared with other types about which he might feel very much freer and certain as to the future,—the contrast between the type that he has to give thought to, the kind that worries him a bit before he goes to sleep at night, as distinguished from the kind that he feels he can put at the bottom of a safety deposit box and forget about it until he wishes to dispose of them or until his estate has to liquidate them.

Well established industries and well established concerns in well established industries could offer loan contracts which would appeal to the investor, having a smaller necessary element of compensation for this exercise of the function of capital management. In contrast, a pioneering establishment which had not yet existed long enough to establish any kind of a presumption in the investor's mind as to what the kind and character of the investment really is would undoubtedly give him a very considerable concern. The point of the discussion is that the wages of capital management constitute an important element in the loan interest rate, and that this element is of varying significance in different industries and in different enterprises in different industries, as well as varying from time to time with general economic conditions. Consequently it is my opinion that this element is worth considering because it appeals to me as being peculiarly significant in the first place in the natural gas industry, and in the second place in this kind of an enterprise in the natural gas industry.

I am not talking about the expenses of operating a gas pipeline or gas production or any other activities of the gas companies. I am talking about the compensation that the person who is asked to invest in the securities of an institution of this kind will require for putting his money into this sort of thing. We are trying to refine an element which is often rather crudely dealt with into its component parts and it is important to do so whenever there is any peculiar significance to be attached to this particular element. It is my opinion that the natural gas industry
1131 is one where that sort of consideration is entirely worth mentioning and giving some weight to.

Question by the Examiner.

To some extent it makes a difference as to how the investment is made, whether by lots of small investors or by a few large ones. For example, certain types of investments

which would require a great deal of care and attention can better be handled in large blocks than in small groups. If an investor of $1,000 were to invest in a situation where a great deal of this attention had to be given, the labor of attention would probably overwhelm the total of the possible return that he would get. That was often my contention with respect to the real estate mortgage investment—that the amount of labor and attention required on the part of these people absorbed almost the whole return and that they were really kidding themselves into thinking that they were getting something comparable to or better than alternative investments available in the way of marketable bonds, for example.

Direct Examination by Mr. Morgan Resumed.

Any kind of an investment which requires additional attention, labor and concern on the part of the investor would require a higher return than one which did not. I hope I made perfectly clear that I am not trying to say that the money spent by a business in the development of its market and opportunities, or the money spent by the business in its experimental work, is involved here. I am not trying to count double. It is entirely unreasonable, I believe, to understand that the expenditures of the business enterprise are involved here.

What we have in mind is simply the time and attention, the energy, care and concern which the people who put up the money give to it over and above the attention which is given by hired managers, technicians, specialists, which the enterprise itself may hire. The very fact, I think, that an entrepreneur capitalist chooses to go into this kind of an undertaking suggests that he sees the possibility of selling what he has to sell in the way of capacity to give consideration and concern to the investment.

Furthermore, I think it is entirely contrary to the fact to assume that these enterprising capitalists can and do sublet all these functions of giving care and concern to the investment. As a practical matter, if they have confidence in their own opinion and are of that class, they probably cannot find the people in whose decisions they have equal confidence to their own and, secondly, if they went out to hire the performance of all of these functions they probably would have to pay substantially what it is worth and there would be no margin in it for them. If the people

who have this capital were not disposed to look for a return to compensate them for the performance of that function, they would in all probability be buying relatively risk-free bonds and becoming passive capitalists rather than enterprising and active capitalists.

1132 I make the distinction between cost, as I have used that term here, and expense that is commonly made in economic analysis. Not all costs reflect themselves in the form of expenses. I conceive an expense as a cost which has reflected itself on an accounting statement or as a fact in a business record by virtue of one party paying another for something. But there are a great many instances under which costs do not reflect themselves in the form of expense and that is, of course, what I had in mind in the distinctions that I have been trying to make here with respect to the wages of capital management. The payment for an expert employed by the enterprise itself becomes an expense of that business and is accounted for and recorded on the books of account. But the performance of the function of capital management does not take the form of a transaction. It is something that the individual does directly for himself and consequently accounting as a system of business record keeping has not developed any devices by which in a practical way we can record and reflect costs which do not express themselves in the form of expenses.

In simpler forms of business undertaking that of course is well understood. The farmer who employs a hired man has an expense for the hired man but the labor which he himself performs is just as much a part of the cost of producing his potato crop as the expenses that he incurs on account of the hired man; and it is just as worthy of recognition in an analysis as if he had made the expenditure. Consequently, the function performed by the capitalist, in my judgment, for himself in engaging in capital management is a cost which should be recognized even though it does not take the convenient and obvious form of an expense in the accounting records.

Question by the Examiner.

In my opinion there is no complete difference in the concept of the wage of capital management, whether the management process takes place after the investment is made or as a preliminary thereto. The performance of

the functions of capital management to a considerable extent precede the actual commitment of capital. In fact, much of the work is done normally prior to an actual commitment. It continues while the capital is committed, in fact, continues until the time that the investment is liquidated. As a result it is a continuous function, starting from the time the individual incurs these costs in the exercise of care, attention, concern and the application of intelligence which are not reduced normally and readily to an expense record.

Direct Examination by Mr. Morgan Resumed.

To apply the principle of the illustration, the man who makes the loan on the farm will inspect the land, have the title examined, draw the note and mortgage, file the mortgage, pay the fee and do a lot of things before he lets the money get out of his hands; but he knows at that time, if he is an experienced investor in farm mortgages, about those things that he is going to have to do hereafter in order to get the interest and see that the things are done which must be done for his protection,—that the insurance is not only placed on the improvements but kept on them during the continuance of the loan. That kind of transaction happens to be in a field in which I have some personal experience and it comes readily to mind as one
1133 which illustrates the performance of an indispensable economic function which demands that it be compensated but which is often overlooked simply because it does not take an obvious identified form in market transactions; and it was my opinion that since it did not take the form which would be readily reflected as an expense that the appropriate way to recognize its cost, its compensation, is in the return and that is in fact the way in which it is normally compensated and, I believe, the only appropriate way to compensate it.

Questions by the Examiner.

You ask whether the labor incident to changing an investment could not be charged off against the existing investment rather than charged off against the future. I believe it is in the nature of human investment psychology to look forward much more than to look backward. While the money is being held and the owner is looking for an

investment the cost incident to the interval might be termed negative interest. As it was suggested to me in connection with some investment banking investments in 1929 and 1930 and even in 1931, "Why not take a look at the possibilities in the natural gas business?". The question was put to me as a consultant and this particular organization had not had any experience in that particular line, had not been in it before, and my advice was that the cost of just getting constituted and acquainted and going through all that for that concern made it rather impractical even as an opportunity in that day when opportunities were getting scarcer and scarcer. Because we look forward I think it is dominantly in anticipation, and I think appropriately it begins when you have a reasonable thought of considering seriously a given opportunity.

Direct Examination by Mr. Morgan Resumed.

I am talking about the cost even prior to the planning, designing, weighing and balancing of the terms, and the difficulties that enter into the matter from the time a particular enterprise is conceived of. I think that just as soon as the investor has a reasonably substantial interest in considering the possibilities of a given line of employment of his capital he will then be conscious of the amount of extra attention, concern and effort that this particular line would impose upon him in the light of the return which is probably available; and he would make a comparison between that and the alternatives that would be available to him which in his mind probably would not require the same amount of attention. If he is thoroughly discouraged about the amount of attention or consideration that he would have to give the employment of capital under those conditions he will probably have recourse to a passive investment in the form of well-established bonds.

In other words, my thought is that if one who incurs these costs of whatever character they may happen to be which are not included in the operating expenses after the enterprise is put into operation, but costs which are outside of that such as the cost of mapping out, planning, etc., and putting the enterprise on a going basis into which the money is to be invested, and the cost of keeping up with that investment after it is made, is denied compensa-
1134 tion for that, men will cease to be enterprising and will put their money in passive investments. If we

are to have capital for enterprises of this sort we must compensate those who perform those services. It is by no means a theory but an actual fact that investors do distinguish among investments on the basis of the time that they have got to give to them. In certain sections of the country there is a lot of old accumulated capital, third and fourth generation capital, traditionally alleged to be the case at least with respect to New England. For a great many years you were asked, "Well, have you got distribution in New England? Have you got dealers in New England?" "Yes." "Well, you cannot sell this kind of security in New England, because they just want the kind that you can put down in the bottom of the strong box and forget about it."

An example of the early history of this enterprise illustrates my point: Two of the original participants, whom we will call "X" and "Y", participated in the performance of the enterprising function at the inception and through a period of the development of the enterprise. At a later period they decided that under the conditions as they were developing they would withdraw from it. Thus it represents a continuing or a recurring function. They undoubtedly did not make the decision to withdraw on the toss of a coin or anything of that sort. They undoubtedly gave a great deal of thought to the probable outcome under the conditions as they were developing, and they were performing this selective judgment-exercising function at that time.

If a pipeline were constructed after research and a line constructed without research would have been less economical, you ask me to state who should receive the increased earnings brought about by the research. The answer to that question cannot, in my opinion, be given absolutely and categorically. It involves an amount of economic analysis which is probably to a degree unknown except to those who engage in that sort of refined thinking. The first statement I would like to make is that it depends upon whether the enterprising capitalist envisioned the probable gains from taking these pioneering risks, whether they were entirely fortuitous or whether they were part of his inducement as a first and most fundamental consideration; and secondly, whether or not he viewed these as just sufficiently adequate to make the undertaking attractive to him and interesting in the light of all the risks and uncertainties

involved. If he viewed this gain as merely compensatory then he would, if he were asked to put himself in the same position today, view the sharing of those compensations with any one as a reduction in the total probable return which induced him to act the way he acted; and that of course would make the whole undertaking unattractive and uninteresting to him.

1135 I want to make it perfectly clear that that answer is based on the assumption that the return envisioned was just compensatorily interesting to him under the circumstances as they existed. If, as a matter of fact, he envisioned as compensatory an amount which would have been half that much, it might make some difference. All of that is based on this understanding, that the way in which our economic system works under the competitive system, it is normally the fact that a considerable number of people are envisioning the opportunities that exist. It is rarely the case that there is only one person or one group who sees the economic opportunity available in a given time and place. It is only reasonable to assume that these various people who are potential developers of a given situation do not envision it as equally attractive. Thus, to make the illustration a bit more realistic, let us say that there is a group that looks forward to an additional return, on account of this situation, of 5 per cent. There is another group that looks forward to an additional possible return of 3 per cent above. Another one, just for illustration, gets down to finding that if there is a possibility of 2 per cent additional return it looks attractive and interesting to them. There is that competition, and those who are willing to undertake it at the lowest return, normally those who are ready sooner to undertake the engagement, tend to express for our kind of an economic system the best price at which we can get that done at that time. Of course, assuming that there is no monopoly of the opportunity, that there is an opportunity for this competition of the people who are willing to assume these functions at different prices, and that there is every opportunity for free bargaining in every sense to achieve or get hold of this opportunity, the fellow who is willing to work for society for the lowest price, in general and on the average, gets the opportunity.

From that standpoint, therefore, on the basis of those assumptions I should say that it is reasonable to conclude that in the normal working out of the competition for op-

portunities to invest, the price at which people are willing finally to undertake it reflects fairly the price which society would have to as of that time pay to get that function performed and assumed. If the assumptions there made hold true, then the only possible conclusion is that the marginally necessary compensation for the performance of this function is the socially lowest cost; and if it is such, it ought to go to the people who perform the function. If they were not allowed it and saw that they were not to be allowed it is only reasonable to assume that they would not take on this function. I mean if they were not allowed the incremental return for the exercise of this economic function. That is, in my opinion, a well-established economic thought, that the ordinary processes will drive this return down to the price at which the group that would do it for the least would do it; and that is the group which normally gets into possession of the opportunity. There is, however, as I mentioned, the time element involved. Another group might want to wait longer and should that be the case, if society wants it done then, and we do believe that time is of the essence in the development of improved methods, it is necessary to compensate at the rate at which the most effective or the most economical performance of this function would perform it.

1136 The fact that all of the increased increment of return attributable to design, skill, management and enterprise be allowed the enterpriser who furnished those elements does not mean that the public is denied any benefit from the enterprise just because the public does not receive its benefit in the same identical form. In fact, if society did not benefit and had not benefited from the application of that enterprise principle, the principle would not have lasted as long as it has. The public gets its share and gets it in a bigger and more important way, I think. I reached that conclusion by this line of thought, that if one is to come into a market with a new product or attempts to produce a product in a new way, he is undoubtedly implemented with an idea or a technique which makes him believe that he is going to be able to produce a better product or produce the same product at a lower cost. Industrial history definitely suggests that unless he has some such advantage, unless he can offer the product at a lower cost, or a superior product, or offer it under better service conditions, his chance of success is indeed very slim, that the inertia of customers, the disposition to stay by the products that

they have and to use the kind of service they have used, would put up an awful battle, an awful resistance to his succeeding in getting a part of the existing market or service. Consequently, it is implicit in ordinary human behavior with respect to such business that he would only get ahead when he had something to offer the customer which was differentially better. It is out of these improvements and this lowering of costs of production that society has gotten its really important dividends from the enterprise principle. Moreover, suppose it were no better product or not significantly better, or the service were not significantly better, the entering of an established market and attacking the customers of an established business would cost much money and would presumably take a very considerable period of time,—so much so that the ultimate gains on the same technological or economical basis as previously existed would not be attractive or interesting to such an enterpriser.

He has then to really have something differential to offer society to envision any reasonable chance of gain for himself; and society gets its dividends through improved products or lower prices as a result of allowing the enterpriser to believe that he can obtain the rewards for his efforts.

Cross-Examination Interposed by Mr. Staff.

In my previous answer I attempted to state that the amount necessarily allowed to secure the functioning of this kind of a system was the equivalent of the expectation of the marginally necessary return by the entrepreneur. The expectation had to be held out to him. In other words, you had to hold out this much or whatever the amount is, and if it matched his vision as to what was likely to be attractive, that is what he would go to work for. The excess under the strict interpretation of the competitive marginal analysis would be what would be denominated as a surplus or extra gain, but it does not necessarily have anything to do with the gains to society as a whole. He may have had a much better thing than he envisioned and society may have gathered much larger by-products gains. I don't mean by that that he had in mind society's advantage necessarily. I am not imputing any philanthropy to him. Neither am I imputing to society any philan-
1137 thropy toward him. It is usually a stiff, hard bargain, each trying to get what it can out of it, but I

just want to make clear that my answer to your last question did not imply that society would thereby be getting less, but simply that the entrepreneur might be getting more and society might be getting tremendously more. Witness only a few of our striking industries in which that has happened where the possibilities were in no sense realized and where the gains to society today were in no sense appreciated or understood. Both may be in excess, and of course the opposite may also be true, and that is that the expectations of the entrepreneur are not necessarily realized, and he may have been completely mistaken as to whether this would be a benefit to society and they get no dividends either.

If it becomes the understanding of people potentially disposed to be enterprisers that there is to be no allowance of any compensation for the exercise of these functions, they naturally will not be disposed to assume them. Consequently they will not go ahead and attempt to apply new things and new techniques to the development of new products and new markets. As a result of that the progress of our industrial system would be hampered; the disposition to go into these things would be discouraged, and society would lose the benefit of the improvements. More than that, I think it would lose the benefits of the efforts to do the things more economically, which is another result of the operation of this kind of a system. Those who succeed in developing the techniques and methods which economize on our natural resources, which economize on the use of capital, grant a secondary type of dividend and gain to society in that they make these same resources available for alternative employments.

1138 I believe it is important to distinguish between the wages of capital and the compensation for risk-bearing and uncertainty. They are two entirely different things, in my opinion, and have nothing necessarily to do with each each other except that they are commonly associated and commonly met with in the assumption of a business undertaking. Moreover, I believe that risk and uncertainty which I have linked together are to be distinguished.

We find it useful in economic analysis to note that certain classes of uncertainties develop under conditions which give you some kind of an opportunity to forecast or appraise. It is not uncommon to think of a risk as in effect an insurable uncertainty, that is an uncertainty with a suffi-

ciently broad or well established probability basis or experience base so that there is some possibility of appraising the element of risk. The distinction, I think, could well be made by an illustration drawn from the insurance business. An insurance company spreading its risk over thousands of lives, has the guidance of an actuarial experience which reduces the necessary compensation which has to be offered for the chance of death, for example, to a determinable risk, a relatively measurable risk. So any type of business uncertainty with respect to which there is a sufficient experience and background such as an industry in existence long enough and employing a technique well enough known to have been tested, thereby becomes more a matter of the risks involved, because you have got some sort of an actuarial background even though you do not have the kind of thing that the insurance company has access to.

I would like to contrast an uncertainty with a risk by using the same illustration of the insurance company. An actuarial record is based on the past. It is still possible that an insurance company will experience a loss out of line with the actuarial basis on which they have calculated their risks. Consequently, there are the chances of loss over and above the calculable or approximately calculable risks which have to be recognized; and those we choose to distinguish as uncertainties, indicating by that distinction that they are simply hazards which are as yet so new, as yet so rarely experienced, that we have no good basis for bringing it down to more approximately measurable quantities.

In a more practical sense, what I mean is this. The ordinary investor gets used to industries and the characteristics of industries and he establishes something of a measure or opinion as to the degree of risk involved. You approach him with an opportunity for investment in an industry in which no such experience may exist and he is inclined to look at it in the nature of a gamble.

This investment has elements of such uncertainty in it. Although uncertainties are not readily reflectable in the ordinary range of risk compensations, I think it is rather important to distinguish those two when you are dealing with an industry which has such outstanding characteristics that the element of uncertainty is even of more importance than the element of risk as the latter term is defined in the specialized sense.

I did not mean to leave the impression that loan interest is all of the rate of return to which an investor is entitled. I thought I had clearly testified initially that the return could be divided into two important elements: one, 1139 loan interest, and two, the return to enterprise over and above loan interest. What we have been concerned with here is the break-down of the loan interest element only and I did not mean to imply at all that the loan interest is synonymous with necessary supply price of the capital for an industry. If you were to restrict or conceive loan interest as synonymous with the return, there would be no inducement to be other than a lender. That is the implication of loan interest.

This additional compensation is what I have in mind as the compensation for enterprise. The compensation for being a borrower rather than merely being a lender, the compensation for assuming a position of gatherer of loan funds, if such are needed or are available constitutes this additional compensation. Whether an individual chooses to take that position depends upon the sum total of the economic and I might add political circumstances prevailing. Under many conditions, he chooses to sit back and let somebody else do it, that is, he will say let somebody else be the enterpriser and let him use my money under proper protective conditions, but I do not see fit for the rewards apparently available to take this pioneering position of performing the enterprise function and employing other people's capital under the rigid terms which they are disposed to impose upon me. There is not anything new or peculiar about that observation. It has been regularly accepted and observed in regulatory practices that the return has been something more than loan interest.

The natural gas industry appears to be a relatively young industry with a distinctly changing technique, an industry which seems to offer the promise of further expansion and public service, one which because of these circumstances appeals more particularly to the enterprising capital and enterprising capitalists who are willing to assume the hazards of this kind of an undertaking. The enterprising capitalists would not be satisfied with loan interest, or for that part, in my opinion, with a fixed and rigid rate of return. It just is not in the nature of true venturesome capital to engage itself on a cost of service contract.

In my opinion, the public utility industries have not prospered and grown under a system of regulation of the

profits. In a very considerable part, the industries classified as public utility industries had their very rapid growth and development during an era in which the regulatory process was still relatively approximate and loose in its application of what we understand to be the regulatory formula. Enterprises in those industries during the 15 years of the most rapid development still had the idea that there was a chance of an enterprising profit. I had in mind roughly the 15-year period in which the electric industry doubled in each five years, say 1924, 1929, or 1930 something like that. That despite the imposition of regulation as a legal fact, entrepeneurial investors still persisted in the belief that there was a chance for an enterpriser's return in those industries; and as a matter of fact the regulatory process was not imposed with the rigidity which the regulatory formula would imply in all of the states of the United States throughout the period of development and growth of these utilities. Item after item has been added to the range of regulatory function, additional authority has been granted, commissions got themselves organized and oriented and gradually got to work. It took a very considerable period of time before the theory of regulation started to approach the fact, and I say that advisedly, of a rigid application of what we understand to be the regulatory formula.

1140 Consequently, I answer that question with some assurance that I do not believe the traditionally regulated public utility industries grew, as they did grow, under the system of profit regulation. They did believe that there was a chance for the enterpriser's profit, and as that prospect narrowed somewhat, the holding company era of activity became apparently a part of the frontier in which there was still some chance of the exercise of the entrepreneurship and the gaining of such an additional reward.

It is only in relatively recent times and still in relatively restricted quarters that there is an increased warning to the entrepeneurs and investors that this regulatory formula is going to be imposed with increasing rigidity, precision and exactness, and it is that in my opinion, which is primarily making the investors feel that there is not going to be any chance for an adequately compensatory return.

I have not looked at the figures recently, but a few years ago was rather amazed to find that somewhere around one-half of the operating electric utilities were recorded not

to have any taxable income. (Objection by Commission Counsel overruled.)

As I remember it, it was one-half in number rather than in capacity. I have not had occasion to look into the question of the proportion of the invested capital in that industry which was involved.

In my opinion, the imposition of a style of regulation which was developed for and adapted to relatively mature and maturing industries, upon a young and growing industry still in the stages comparable to the early stages of these industries now so much more readily regulated, would be a distinct threat to their growth and development. This statement is directed entirely toward the question of how the rate of return should be considered and envisioned in the course of imposing regulation of this kind on an industry.

In my opinion, if there is going to be a regulation of an industry in which it is apparent that there is a large function for enterprisers to perform, which is an industry still in the state of development and in which those social results may be looked forward to from the function of the enterprise, then all I would want to say is that the responsibility for properly rewarding and encouraging that enterprise definitely falls on a regulatory authority and it will have to assume the responsibility of keeping the enterprise properly fed, clothed and alive, if it desires to keep enterprise alive in an industry of this sort.

I believe that if the mature and rigid formula of regulation is imposed on an industry in its teen age that it will discourage its growth and development and that the way in which that can be avoided is by a proper and appropriate recognition of the reward for the disposition to be enterprising. (Objection and motions to strike above testimony by counsel to the two Commissions overruled and denied.)

I am conscious of the distinction between a past investment and investment still to be made. A past investment is helpless. That commitment has been undertaken, but its alternatives after it has sunk itself in a fixed and helpless form are very different from what its alternatives are at the time when it is still free to make a choice.

1141 Consequently, my concern is not with respect to the helplessness of a particular commitment but rather with respect to the effect such treatment of past invested capital will have upon an enterprising capital still available for investment in this kind of an industry, given at-

tractive returns. Putting it another way, the only protection which past invested capital really has is the necessity of meeting the terms of capital which is still footloose and fancy free. I think it is a matter of increasing importance because of the increasing scope and range of regulatory activities. The power of an industry to command more capital is pretty largely measured by the treatment which past investments receive within those limits.

Presumably, we are still relying upon a system of individual enterprise and initiative as distinguished from a system of state socialism or communism; and while I am not passing my judgment on alternate systems, if we choose to operate under this kind of a system, it seems perfectly obvious that great reliance should be placed upon the adequacy of the stimulus offered to enterprise.

Cross-Examination Interposed by Mr. Slaff.

By the use of the term "presumably" I meant to indicate that we are aware that in this country as never before there is an enlarging opinion, or let us say sympathy, with some of the foreign ideas such as state socialism and communism, but as yet we seem to be on, let us say, the alkaline side in the equation and relying predominantly on a system of private initiative and enterprise.

Direct Examination by Mr. Morgan Resumed.

To me there is a distinction between rate regulation and profit regulation. I believe you could have rate regulation without reaching the point of rigid profit regulation. I do not believe it follows that you can not have regulation without inappropriate discouragement of enterprise, if I may say so. I think there is a wide difference between imposing restraints on private action and conduct in public interest, and the extreme, for example of imposing the rigidity of the public utility regulatory formula in an effort to regulate. It is to be observed that more and more industries are being subject to regulation. My expectation is that this range of industries subject to regulation is going to increase.

I think it distinctly in error and represents rather careless transposition to assume that every industry that is going to come under regulation is going to be put under the scheme of regulation evolved as more or less suitable to the public utility industries. I think in fact that anyone

concerned with the desirable development of a system of public regulation would have in mind that the same suit of clothes is not likely to fit effectively any kind of industry and every type of circumstances. I view distinctly with alarm the disposition to take one suit and measure and impose it upon a given industry, irrespective of its characteristics. (Objections by counsel to the two commissions to the testimony with respect to "views" and "alarm" overruled.)

The fundamental of the public utility formula of course is the traditional concept of a fair return on the fair value of the property used and useful in the public service. When that principle was first enunciated, its meaning and implication were of course not at all clear. It has had a considerable period of development in the minds of people who have engaged in regulatory practice and of course in the minds of the courts in subsequent opinions following the opinion of the Court in Smythe *vs.* Ames. In my opinion, the particular value of the court's opinion in Smythe *vs.* Ames—understand that this is from the standpoint
1142 of the economic consequences—was its comparative tolerance, its lack of rigidity and fixation, in fact the very thing which a great many people complain about with respect to the attitude expressed by the court in that particular case. What I mean to imply by referring to the rigidity with which that formula is now being increasingly envisioned with respect to the more mature industries under regulation, is the idea that rates are necessarily fixed at a level which does not allow the enterpriser to envisage the possibility and likelihood of profit in the traditional sense of a possibility of profit.

As a matter of economic experience it does not always follow that the gains for which an investor hopes in enterprise are actually realized by the enterprising investor. Definitely, expectation is one thing while realization is another; and I have expressed my opinion, I believe, very clearly that it is expectation which functions in our kind of an economic system. In fact, we observe that it is not the number of failures in an industry really that discourages people from going into that industry, it is rather the conclusion that no one has a chance to make a profit in a particular industry that discourages them. If the possibilities of profit and gain appear to be there, the amount of disillusionment which comes with realization does not seem effectively to destroy the disposition to be enterprising.

As a matter of fact, if every investor realized all that he expected when he invested money in a given type or class of industry, it would cease to be a risky industry. It could not then involve such a degree of risk and uncertainty as to call for the exercise of the entrepeneurial function if such were the results.

The idea that I am trying to express is not new or novel or unique in any sense. I was reflecting merely what was in my opinion the accepted economic premise with respect to the relationship. In fact, it is an idea which is about as old as organized economic thought and as far as I know has not been successfully challenged throughout the evolution of economic thought. I would like if I might be permitted just to quote a classic paragraph from Adam Smith, the first of the economists, on that particular point:

"In the greater part of mechanic trades, success is almost certain; but very uncertain in the liberal professions. Put your son apprentice to a shoemaker, there is little doubt of his learning to make a pair of shoes. But send him to study the law, it is at least twenty to one if he ever makes such proficiency as will enable him to live by the business. In a perfectly fair lottery those who draw the prizes ought to gain all that is lost by those who draw the blanks. In a profession where twenty fail for one that succeeds, that one ought to gain all that should have been gained."

The successful hazard-takers do not gain all in the operation of the economic system. The evidence is perfectly clear on this point. They do share the difference with society. If I may finish that quotation from Adam Smith, he went on to say:

"The chance of gain is by every man more or less overvalued and the chance of loss is by most men under-valued, and by scarce any man who is in tolerable health and spirits valued more than it is worth."

1143 The point of that observation is being increasingly appreciated in the operation of our economic system in that the disposition to be optimistic on the part of human beings leads in general to overvaluation of the chance of gain; a willingness to take the risks and hazards for less than their mathematical chance.

I would say that prior to regulation, the natural gas pipeline industry and the natural gas industry as a whole were subject to both large losses and possibly large gains. The history of this industry is strewn with cases of loss which make it clearly classifiable as an industry in which many

may lose, and apparently from the records, some can make substantial gains.

In my opinion, if the principle of regulating the rate of return or the power to regulate the rate of return implies the refusal to recognize the necessary compensation for assumption of an enterpriser's position, it would clearly discourage the flow of capital. In a gamble in a lottery in which there may be gains but the gains are small and rather predictable, there is not going to be anyone who is going to very freely take any large hazards and risks; and it seems to me that this goes back to the principle which I tried to explain earlier, that it merely involves the adequate recognition of the innate characteristics of this industry to offset the very probable investor reaction to the imposition of regulation.

In my opinion it is entirely inappropriate in the sense that it does not meet the economic necessities of the situation to assume to transpose rates of return which are appropriate for the characteristics of an industry such as the electric or water industry to the natural gas industry. There may well be something to be gained by studying and observing the behavior of investors under a given type of bargaining under a given rate of return, but to make an easy casual transposition of rates of return that are more or less traditional in one type of industry to an industry whose characteristics are very different will not get the desired economic results.

Even among those utilities which are of the character I have described as being on a more permanent basis and which will continue on indefinitely, the rate of return allowed in one instance is not necessarily the same as in other instances. From my study of the rate of return determinations, it seems clear that earlier in the history of the public utility regulation there was a disposition to make rather marked distinctions among and between the utility classes. Urban transportation was frequently recognized as having a different status. It was not uncommon for commissions to recognize the difference between electric and gas companies in the determination of the return. I may say, however, that my following of the more recent tendencies seems to indicate that as these industries have gotten older and have come along under a rather common formula of regulation, that the disposition to impose a more nearly even rate of return has apparently developed. I am not condoning it or approving it from an economic

standpoint, but that is my conclusion from observing rate of return determinations. I mean that reference to other rates of return is not a useless point of reference, but nothing more than that for the moment, at least.

What I have been trying to say from an economic standpoint in trying to predetermine the investor's probable reaction to this industry in allowing his capital to go
1144 into it, is that he is conscious of the distinctly different characteristics of this industry. The natural gas production and transportation industry in my opinion does not have the legal or the economic characteristics of a public utility; and I am of the opinion that it cannot as a practical fact make the kind of bargain for capital that a public utility can make. (Objections by counsel to the two Commissions to the above legal conclusion of the witness overruled.)

In my opinion a public utility which engages in natural gas production and transportation and distribution should be distinguished from a natural gas pipeline which does not engage in distribution activities as far as representative risks are concerned. I believe there is no justification for confusing those conditions simply because there may be an identity of physical plant, or there may be an identity of dealing in the same kind of physical product. There are in my opinion public utilities which distribute natural gas. In that sense there are public utilities that are in the natural gas business. I find also that there are public utilities which own also natural gas reserves and engage in what we call the production of natural gas. Some of the gas fields are sufficiently remote to make it necessary for the same public utilities to engage in the transportation of natural gas as well.

What I mean to say is that just because a public utility produces natural gas that it distributes does not in my opinion necessarily make a natural gas producer a public utility. If I may speak to a very simple illustration; a horse is an animal, but all animals are not horses:

Question by the Examiner.

A public utility is an enterprise characterized by certain distinguishing legal and economic characteristics. Those characteristics go to both the conditions under which the service is supplied, and the conditions under which it is produced. We seek for the characteristics of a public utility

both in the character of the supply of the service and in the character of the demand for the service. One of the commonplace requisites is a high degree of the control over the market, more or less casually referred to as a monopoly.

Normally the practical economic monopoly which follows from the character of the investment is recognized by the law as a legal status in addition to the economic status. Thus we have on the supplier's side usually and most characteristically in my opinion a degree of control over the market enabling such an enterprise to exercise control over the price to the extent of differentiating in the price and maintaining price schedules which differentiate among classes of markets in which possibly the power to discriminate in prices—and I do not use the word "discriminate" in any inappropriate sense—I mean discriminate in the sense of differentiate—the power to differentiate in prices in the market is probably one of the most fundamental requisites and circumstances prevailing. Some people talk about the milk industry, for example, as a public utility, and one of the reasons why in my opinion it can never conform to that classification might make the answer to your question clearer.

A milk distributing company might even have a substantial part of the market as some of them do in some communities, but it still can not conform to the formula because it does not have such a control over the market as will enable it to differentiate or discriminate among customers. It cannot, for example, successfully engage in differential pricing, it cannot establish the kind of a
1145 pricing structure and rate schedule that a public utility can.

I understand that one large milk distributor once tried that,—he thought it was a good idea to offer a gallon at a differential price. The net result was that that milk company experienced the distinction which I have in mind, namely, Mrs. Jones and Mrs. Green and Mrs. Brown said, "Did you hear about it? You can now buy a gallon of milk at this differential price." So Mrs. Green and Mrs. Brown said to Mrs. Jones, "You buy the gallon, and you sub-retail to us" and the net result was that of course the differential market was broken down promptly and the milk company retreated to the system of prices which it had to employ.

The nature of a public utility however is not to be found merely by examining the conditions under which production takes place. We have to examine in addition conditions

under which distribution or the demand expresses itself. This is in looser and easier language commonly referred to as the essentiality of the service, the necessitous character of the service rendered to the people.

It is clear that you cannot have this status by merely having one of the circumstances prevailing. There are many necessities in this world of human beings,—the essential requirements to have food, clothing and shelter, which are probably most necessitous, but we do not assume to put industries providing these essentials in the public utility category, because normally on the supplying side, these services are rendered under the conditions of competition giving to the customer alternatives which make such exercise of public authority unnecessary and impractical.

So in attempting to find a fundamental concept on which to distinguish public utilities, we say that is necessary to view both sides of the equation. We have a coincidence of the two standards, one, the production under conditions of restriction which is for practical purposes the single provider in the single market situation, and on the other side, a necessary or essential product. When you have the coincidence of a control of the market on one side and dealing in an essential on the other side, you have the requisites of a public utility status, particularly if the conditions of service are such that it gives the enterprise control over its product down to the final disposition in consumption, because if the technology of the industry is not such as to give it that control down to the point of final consumption, it can not conform to the economic behavior which we find in a public utility.

Thus in the briefest sort of way, we have the implication of a high degree of monopoly on the one side and an essential service on the other, which two requisites combine to place the customer in what we denominate a position of dependency.

Direct Examination Resumed by Mr. Morgan.

Every institution affected with the public interest is not a public utility. I recognize an economic distinction between what is commonly referred to as a natural gas distributing company which owns no distribution or production facilities, one which is known as an integrated company owning distribution, transportation and producing facilities, and still a third class which owns only transpor-

tation and producing facilities. Imported economic differences are to be noted with respect to this hierarchy of enterprise. The investment in the distribution property em-
ployed under the public utility status, is commonly
1146 regarded as being more secure since it is exposed to
fewer of the hazards of industrial enterprise than an investment in property not so devoted. A public utility which also invests in natural gas production and transportation is investing in an industrial area which is characterized by a larger degree of risk and uncertainty. I believe it represents an exposure to a type of risk that is not common to traditional class of industries recognized as public utilities. I certainly believe that the degree to which the risks and uncertainties are present in this kind of enterprise is unusual and not closely comparable to the degree of risk present in the traditional public utility industries.

The distributing company from an economic standpoint enjoys a practical protection by virtue of the indisposition of any informed investors to place their investments in a duplicating distribution system, for example. And in addition it is rather common to have the law put its seal of approval on that economic fact by the granting of franchises amounting to a legal monopoly on top of what is a rather practical economic monopoly under most conditions.

(EXHIBIT 143 previously offered was received in evidence over the objections of counsel for each of the two Commissions, to whom the Examiner allowed exceptions.)

The natural gas pipeline company subject to the jurisdiction of the Federal Power Commission and the type of utility to which I have referred as enjoying a legal monopoly ought to be distinguished in two respects: (1) A production-transportation company is not engaged in distributing services as a public utility, and (2) it does not, by virtue of an economic characteristic or the legal sanctions granted through a franchise or similar protective device, have a monopoly. It is my understanding that the natural gas pipeline company has not been granted an exclusive franchise of any character whatsoever and that it is possible under the law for a competing company to enter the same markets. I understand that the law is interpreted to mean that if a competing company can offer to render services at lower prices that it may have access to the market.

The three classes of natural gas companies to which I have referred cannot be regarded as being of the same

character and as involving the same risk in appraising the rate of return to which they are entitled. I believe there are three clearly distinguishable stages: (1) the public utility distributing company which may be distributing natural gas; (2) a public utility distributing company which may own transportation facilities which bring the gas which it distributes, and (3) a public utility distributing company which owns not only the transportation facilities but possibly also production facilities and natural gas resources. None of these three are reasonably comparable to a company which has only the last stage, either production only, or production and transportation, because in the first three cases we have a public utility which, incidentally, has investments in these other forms, and in the latter case we merely have a company with an investment in the production and transportation facilities.

In my opinion, the natural gas distributing business is a more hazardous business than the electric distributing business because it has to rely upon a supply of natural gas which is exhaustible. I accept it as a matter of common knowledge that natural gas supplies are exhaustible.
1147 Even though a distributing company may have some protection by virtue of the fact that it has a fairly effective economic protection due to the indisposition of investors to duplicate the investment in distribution facilities and even though it may have a legal franchise which gives legal sanction to that status, yet because it depends upon a source of natural gas supply which is exhaustible, I think it introduces a hazard which is not present in a continuing operation such as the electric industry. When the natural gas supply runs out, there are some alternatives open to such a distribution system, but those are not costless alternatives. It may be able to find a source of supply in another direction. It may have to resume the operation of manufactured gas plants and wean its customers back to accepting the prices and limitations of use which ordinarily accompany manufactured gas production. That also is not a costless experience. The customers will not like it and particularly they will not like the readjustment to a different level of cost prices of the rates.

Furthermore, such readjustment period would undoubtedly afford an excellent opportunity for the electric company, which may reasonably be assumed to be present, to further extend its invasion of the service area of the gas industry.

I have had occasion for a number of years to watch the opinion of courts and commissions in matters of this sort and it appears to me that there has been a rather decided observation on their part of the fact that the natural gas industry is fraught with risks and hazards that are unusual and should be distinguished from those in public utilities; but I would like to make clear that I do not recall any such decision which was not dealing with a public utility company that was engaged in the natural gas business and that the distinction between that level and that of a production and transportation company is another matter.

It seems to me that qualitatively the distinction last mentioned would mean that if the public utility company which had a substantial part of its investment in the more hazardous forms of capital and resources were allowed a return which recognized that, then certainly it might seem reasonable that a concern which had all of its investment in that portion which was recognized as more hazardous would certainly be entitled to a higher rate of return. If the investment were, for example, 50-50 as between a public utility distributing investment and a production and transportation investment, and if a natural gas distributing public utility, for example, were allowed a 7% rate of return, and the one which had half of its investment in natural gas resources and transportation lines were allowed an 8% return, then by simple arithmetic we might arrive at the conclusion that the portion of the investment which was in production and transportation had been envisioned as entitled to something like 9% to get an average of 8%.

In connection with my statement relating to the transposition of rates found for an ordinary electric utility over to a natural gas company, I merely wish to point out this: The differences may be of two types: (1) there appear to be some real differences of kind in the character of the risks and hazards involved in natural gas transportation and production, and (2) there was other hazards which are hazards in different degree. I merely meant to draw the conclusion that the significance of unique risk and the degree to which certain common risks and hazards were present here made it difficult if not impractical to engage in that kind of a ready transposition of rates of

return from a public utility situation to a gas pro-
1148 duction and transportation situation.

I am not at all convinced that a recognition by the regulatory bodies of the necessity of holding out the possibility of increased reward to enterprising capital would result in the public's paying more for the service that it would in the case of a public utility. In fact the burden of much of my testimony up to this point is to the effect that they probably will not pay more. I am of the opinion that in the industries where risk and uncertainty play such a large relevant part, the imposition of a fixed or limited rate of return may actually result in a higher overall cost of the service. That was the point and burden of the discussion on the willingness of people to overvalue the chance of gain, the disposition to take a gamble where there was a possible compensatory return. I am convinced that people will receive service at a lower price under certain circumstances when we rely upon the disposition and willingness of the enterprising capitalists to take the chance, than they would otherwise. To put it in another form, I think there are conditions where a regulated industry actually develops a higher cost of capital than an unregulated industry. In fact, it is not an unusual observation at all to note that the industry where there is the largest chance of gain actually averaged out at the lowest cost of capital because of willingness to accept the risks and hazards that were so great in the light of an inducement in the form of the possibility of something extra in the way of a return.

Personally, I have been of the opinion for some time that the cost of capital to public utility enterprises was probably unduly high compared with the circumstances actually prevailing in those industries merely by virtue of the fact that under the circumstances in which that investment finds itself we do not make use of the capacity to get responses from this profit-seeking motive. It does not necessarily follow that the cost to the public is going to be more because latitude is allowed for the inducing of capital.

What I mean to say is that they will probably receive service at an earlier date, will stand good chances of receiving more adequate service at an earlier date, and there is distinctly the possibility that there will be a fuller exploitation of the opportunity if something is held forth as

an inducement to capture this capacity of human beings to respond to the possibility of an extra gain. (Upon objection of company counsel examiner strikes statement of counsel for Illinois Commerce Commission to which objection is made by counsel to the two commissions.)

When I stated that it does not follow at all that the cost of the service will be increased by allowing compensation for enterprising capital, I meant to express the opinion that there is something valuable to capture and to exploit in the performance of the enterprising function, that if enterprise is induced to perform efforts will be made to find more economical ways of performing the services, the services may be rendered more fully, will probably be rendered more adequately and a wider range of uses will be sought out, and the result of the whole will be to contribute to a larger measure of economic well-being and at no necessarily higher costs than would otherwise maintain.

In arriving at the proper conceptions of these hazards, I have exposed myself to a great many sources. I have examined the literature of investment and security analysis to determine what general attitudes were being expressed with respect to natural gas investments. I did this in the belief that it has a practical significance, because what investment analysis and investment opinion is about capital to be put in these industries reflects itself through their advice and counsel, through their published opinions and finally gets down to the investor, and, whether they are right or wrong, they influence the investor's
1149 opinion and react with respect to his investments.

There is a literature that is particularly concerned with the questions of analyzing the relative desirability of investments. I have a few available expressions of opinion from the authoritative publications in that field, dealing with the subject of natural gas securities. These I consider generally accepted and rather widely used and they may illustrate what the opinion is in these matters. They are taken from books and sources that are in general circulation among the investment public, investment counsellors and economists and others who are interested in informing themselves on that subject. I have taken recourse only to those who have some standing as authorities and are widely used and are significant in that they are influencing investment opinion.

One of the classic treatments on investment is the text

by Hastings Lyon, Counsellor-at-Law, New York City, and lecturer on Finance, School of Business, Columbia University, entitled "Investment", published by Houghton Mifflin Company. Another source is entitled "Investment Analysis" by Walter Edwards Lagerquist, Professor of Finance in Northwestern University, published by The Macmillan Company. And still another is a volume entitled "The Principles of Bond Investment" by Lawrence Chamberlain and George W. Edwards, published by Henry Holt and Company. Then there is "Principles of Investment" by J. E. Kirshman, published by A. W. Shaw Company. Also "Investment Principles and Practices" by Badger and Guthmann, published by Prentice-Hall, Inc. Another volume "Jordan on Investments", also published by Prentice-Hall, Inc. Another volume "Investments and Investment Policy" by Burtchett, published by Longmans, Green and Co. and "Security Analysis" by Graham and Dodd, published by McGraw-Hill Book Company, Inc.

I have gathered together whatever I could find on the natural gas industry in these treatises for convenience. I have a photostat of the pages which seem to have a bearing on the natural gas industry.

(At this point counsel presented to the reporter a document composed of approximately 12 pages of photostated material of treatises with the request that it be marked for identification. At the direction of the Examiner the document referred to was marked Exhibit 151 for identification.)

In addition to those authorities from which quotations are set out in Exhibit 151, there is one authority which I found since I had this exhibit prepared and no quotation from which is contained in the exhibit. I believe the reproduction of pages 396, 77, and 78 from Graham and Dodd's "Security Analysis" was not reproduced in the exhibit. I can read what it has to say in the record, if you wish, or I can provide a copy, if you wish.

(All of the following testimony of Dr. Doran from transcript page 5686 to transcript page 5721 was admitted over the objections of counsel to the two commissions.)

I have stated that these quotations are part of the literature that goes with the investment business and which is consulted by those who are interested in informing themselves concerning investments and investment practices. I did not consciously exclude any that I thought

had any substantial currency or were at all widely
1150 used. Every good library of commerce and finance would have those texts, I am quite sure.

Questions by the Examiner.

I am well acquainted with the literature in this field. I have advised investors. I have taught courses in finance. I have used some of these volumes as textbooks, and I am aware of the relative standing of these texts. I have advised publishers with respect to textbooks in these fields, and I consider this assembly here a selection from the top of the list. There are less known items available that could have been gathered if you wanted to make the record voluminous. There are privately published things which the publishers did not see fit to touch; but these are the volumes which from time to time, are the popular ones used in schools of business and commerce for the training on investment analysis. These are the volumes you will find on the shelves of investment analysis offices and represent, in my opinion, the best of the literature that is in comprehensive textbook form. It is more than a cross section of the literature. It is the best of it, in my opinion.

My opinion as to the value of it is that here we get evidence as to the general attitude on the natural gas industry as it flows down through various layers and finally gets to the investor. Somebody is approached on the matter of investment in the natural gas industry and the fellow has never had any experience in the natural gas industry. He probably pulls down "Jordan on Investments" or Graham and Dodd, or something else. These are, in my opinion, the best and most generally available. My point was these opinions are influencing, because they are the widely used ones. These volumes even reach deeper into the fabric of opinion than that. They are the ones which shape the opinions and attitudes of the investment analysis people as they are being trained and developed. I cannot from memory say that I agree with every conclusion set forth in these quotations. I do not offer it as to that. This is the type of opinion which is influencing the attitude toward natural gas securities. Some of these fellows are wrong, some of them do not know about some things in my opinion, but that is my opinion against theirs.

Cross-Examination Interposed by Mr. Slaff.

There are a lot of other things that influence investors. He is influenced by what he reads in the stock exchange pages day by day, in syndicated columns, by what financial columnists write day by day. I would not presume to exhaust the things that influence him. I meant to add while I admit the full range of the impact on the investment mind from appropriate and inappropriate sources, I certainly resent any implication that the works of men of professional standing, who are devoting their lives generally to specializing in this particular field and who give considered professional consideration to it in formally published works that they are willing to let go out, are to be put in the class with columnists and reporters of the Curb or Market activity for newspapers or things of that sort. I resent the implication that they are to be put in the same class. I have a series here covering a substantial period of time; and I think the record will develop the degree to which the earlier opinions are borne out by the most recent opinions. I do not know whether the opinions expressed by the authors represent the views of the authors today. I have not asked them. In my opinion, Mr. Lagerquist has not changed his mind.

151 (EXHIBIT 151 was offered and received in evidence over the objection of counsel for each of the two Commissions, to whom the Examiner granted exceptions.)

The paragraph on page 384 of Mr. Lyon's work on "Investment" reads:

"This discussion of gas as the basis of investment has been confined to the manufactured product. There are areas in the United States producing natural gas that enters largely into the domestic and industrial life within reasonable transmission distance of the producing fields. Substantial commitments of capital have been made in the development of the natural-gas fields. Limitations both of space and of knowledge make it seem inexpedient to enter on a consideration of any special characteristics of investment in natural gas, further than to say that the asset does not seem susceptible of measurement to the extent of most mining properties, and in this respect to approximate the oil business rather than the other extractive industries. This, however, is not to say that it may not be a perfectly proper field for investment for one willing to consider what the risks may be and to assume such as are found."

From page 390 of "Investment Analysis" by Walter Edwards Lagerquist, I read:

"The great draw-back with the natural gas companies is sudden exhaustion of the supply which may take place at any time. This is especially true where several municipalities use the same supply. Corporations which supply natural gas and do not make provision for the ultimate exhaustion of their gas wells must, of course, lose their original investment."

Also the paragraph on page 395:

"While the same general tendencies are to be found in the earnings of natural gas companies in relation to population, the ratios are entirely different. The tendency for the ratio of margins to increase with the increased output, however, is very much greater in natural gas companies than in artificial gas companies. There are so many variables entering in the control of costs of natural gas that while this tendency is very pronounced in the whole group, there may be wide variations in the costs within each division of companies in the group. But this fact only necessitates an analysis of the other factors used in determining the values of gas companies."

I will now read the sentence on page 380 of the "Principles of Bond Investment":

"In those sections supplied by natural gas there has not existed the same need for higher rates because of increased coal prices, but the exhaustion of supply has frequently embarrassed the producer and has made necessary the installation of artificial gas plants with resulting higher prices."

I will now read the sentence underlined on page 480 of the Badger and Guthmann work in 1936:

"The rapid growth in the recent past of long dis-
1152 tance pipe lines for the transmission of natural gas from oil fields to the large metropolitan centers has added new problems for the investor."

At the request of Mr. Booth, I will read the remainder of that paragraph:

"The companies which produce such gas are usually oil companies, but the transportation, which is a major cost factor, is generally undertaken by independent corporations, in which a gas utility may have an investment interest. To the extent that natural gas instead of manufactured gas is sold to the consumer, investment in production

facilities may be reduced and the customary plant turnover and operating ratio increased. Since natural gas has greater heating value than manufactured gas, there has been a tendency toward the measurement of gas, not by cubic feet, as before, but by a unit of heating value, the therm."

From page 486 of the same work, I read:

"The greatly increased availability of natural gas at low prices in recent years has done much to enhance the position of this branch of the industry. Since more than half of the sales of natural gas have been for industrial purposes, the fluctuations in demand are sharp. The mushroom growth of many natural gas producers not engaged in retailing, and the low levels to which business activity has dropped, have resulted in a great deal of financial disturbance among such companies. Natural gas companies which sell wholesale to utilities instead of retail to the ultimate consumer should be regarded as industrials with a depletion type of asset rather than as utilities. Very often the gas business is carried on by the same corporation that conducts the local electric light and power operations. While this combination may hinder the type of analysis outlined, it should tend to reduce the somewhat greater investment risk usually attributed to an independent gas company."

I read next from page 158 of "Jordan on Investments":

"Until recently, the great bulk of the gas sold by the American public utility companies was manufactured through the destructive distillation of coal."

"The cost of the construction and operation of the long-distance pipe lines, however, largely offsets the basic saving in production cost. While there can be little doubt that the development of natural gas will play an increasingly important part in the entire gas industry, for many years to come the great markets of the North Atlantic Seaboard, because of the enormous expense of constructing adequate pipe lines from points west of the Mississippi River, must rely primarily upon manufactured gas."

From the next page of the same work, I read:

"A frank appraisal of relative advantages leads to the opinion that securities of gas companies, particularly of those operating in large cities, usually make good investments, although somewhat less attractive than those of electric companies."

"To a degree, the large sums invested in gas transmis-

sion lines have been committed despite uncertainties
1153 with respect to potential supply in the wells, to potential market at destination, and to actual cost of operation."

Then on page 160, this language appears:

"From an analytical standpoint, the following comments are offered. These comments refer only to manufactured-gas companies, as experience with natural gas in its present stage of development is too meager to afford reliable standards of performance."

Passing to page 265 of Burtchett's work on "Investments and Investment Policy", we read:

"In natural gas, the supply, method of transmission, distance moved, and potential exhaustion of the wells are to be examined. The great number of variables which enter the costs of natural gas company operation make it more difficult to analyze than the manufacturing gas utility."

"So far as financial structure is concerned, there are few unusual peculiarities. Fixed charges (debts plus preferred shares) ought to be lower in a type of utility in which there is inter-commodity competition (e. g., gas-electricity-oil for heating) than where no such substitute exists (e. g. water). While some investment writers condone fifty per cent of the capital structure in the form of bonds, it has appeared that forty or forty-five per cent would be a better figure in most cases."

"Natural gas companies appear to open to the uncertainty of supply. While some progress has been made in estimating the amount of gas which may be expected from a given well, there is sufficient uncertainty as to raise serious loss risks through sudden exhaustion of gas wells."

I will now read the excerpt from "Security Analysis" by Graham and Dodd, to which I referred and which does not appear in this exhibit:

"Investment Practice Recognizes Importance of the Industry.—This conception has been solidly grounded in investment practice for many years. The threefold classification of enterprises—as railroads, public utilities, or industrials—was intended to reflect inherent differences in relative stability and consequently in the coverage to be required above broad interest requirements. Investors thought well, for example, of any railroad which earned its bond interest twice over, but the same margin in the case of an industrial bond was ordinarily regarded as inadequate. In the decade between 1920 and 1930, the status of the

public-utility division underwent some radical changes. A sharp separation was introduced between light, heat, and power services on the one hand, and street-railway lines on the other, although previously the two had been closely allied. The trolley companies, because of their poor showing, were tacitly excluded from the purview of the term 'public utility,' as used in financial circles, and in the popular mind the name was restricted to electric, gas, water, and telephone companies. (Later on, promoters endeavored to exploit the popularity of the public utilities by applying the title to companies engaged in all sorts of businesses, including natural gas, ice, coal, and even storage.)"

The book from which I read the last quotation was 1154 published in 1938 I believe.

It is very disappointing to find so little attention being given in the best literature on investment analysis to the investment problems of the natural gas industry. In general, the authorities seem to view this industry as affording little opportunity for investment as such—I use the term investment in a restrictive sense as distinguished from the assumption of business risks and undertakings. The authorities seem to feel that general advice and counsel in the matter of investment in the natural gas industry is too dangerous to be offered.

Such expression definitely affects my judgment in arriving at the rate of return for this company. An industry which gets that kind of a lack of recommendation is an industry which, from an investment banking standpoint, would be considered as having additional difficulties facing it in raising money. It would be considered at a disadvantage.

This discussion goes to the natural gas industry of which Natural Gas Pipeline Company of America is only one company.

I have examined the treatment given natural gas securities by Moody's Investors' Service. I consider that as a recognized publication and I know that it is very extensively circulated. I was interested in determining what the experience of natural gas securities was with the rating process which Moody's engage in, so I went through the Moody manual, identifying the natural gas companies, excluding the concerns which were only local public utility distributors of natural gas, and I found 87 issues of companies engaged to various degrees in the natural gas industry, with the exclusion that I have indicated. I think I

examined the 1938 volume which was then the latest one available, the 1939 volume having come out in August, or a little later.

I found that Moody's assumed to rate only 32 of 87 natural gas issues. Out of these 32 issues which were given rating, only two were rated Aaa. Aaa rating is Moody's highest classification. I found no issues rated Aa, but I found three issues rated A. The 27 remaining issues which were rated were all rated Baa or less. In fact, the largest number of issues rated were found in the Ba classification, the next to the lowest rating.

The distinction between companies engaged in the producing and transporting operations only and those having a broader field of operation is sometimes somewhat difficult to make; but I believe there were 18 securities which could be classified as being those of companies engaged in production and transportation. Of these 18, only 6 were rated, and of the 6 that were rated, three received Baa rating and three B rating.

I have attempted to make a study of the experience of investors in natural gas investments and investigated the receiverships among natural gas companies during the period 1930 to 1938. The basis for that study is the recording of companies in receivership in Moody's Manual, and I found there were 29 natural gas operating and holding companies,—excluding again public utility companies engaged only in the distribution of natural gas—that were in receivership during this period 1930 to 1938. I attempted to ascertain the bond capitalization of these natural gas companies in receivership during the period 1930
to 1938 and found that the amount of bonds outstand-
1155 ing at the time of the receivership, or the last report available before the receivership, was in excess of $125,000,000. Then, in order to see what the significance of such a figure might be, I attempted to get a basis for comparison in the bond capitalization of all natural gas companies of these classifications that were found in the Manual on which there was a report. I ascertained that to the best of my ability and found that the debt capitalization in receivership represented approximately 24% of the estimated bond capitalization of all natural gas holding and operating companies of the classification indicated above that was publicly outstanding. Of the total bond capitalization in receivership, $90,878,000 was applicable to operating companies and the remainder of $34,566,000 to holding com-

panies, thus the ratio of bond capitalization in receivership of the holding companies was 30% and for operating companies 22%.

I also found that 17% of the estimated preferred stock capitalization of operating companies of the above classification was in receivership during this period and that 5% of the preferred stock capitalization of holding companies of this class was in receivership, representing, for holding and operating companies together approximately 9% of preferred stock capitalization in receivership.

The investor experience, whatever the causes might be, certainly influences the attitude of other investors. An industry that has a substantial percentage of bond capital in receivership would not be viewed as very attractive. In fact, the financial position and condition of industries is often considered in light of the amount of the industry in receivership. Thus, the railway mileage in receivership is a rather common factor that is published and given attention. For years, the problems of the urban transportation industry were reflected by the statistics on the miles and capitalization in receivership, as evidence of the bad financial condition prevailing in the industry.

Cross-Examination Interposed by Mr. Booth.

I consider the results of that investigation as throwing additional light on the general financial position of this industry and in that respect upon the reception which securities of a natural gas company would receive. I would say that that was a factor that influenced my opinion as to the kind of a capital bargain that a natural gas company could make. That observation would apply to these companies or any one that was burdened with the natural gas label.

Direct Examination Resumed by Mr. Morgan.

My investigation disclosed that over the 11-year period 1928 to 1938 investors in natural gas operating and holding company preferred stocks were paid dividends of 48% of the stipulated preferred dividend to which they were entitled. The average does not reflect the low level to which the proportion of dividends paid to dividends possible fell during this period. In 1933, 1934, and 1935, only 21% of

the required amount was paid. In 1936, 27% was paid, in 1937, 43%, and in 1938, 42% was paid.

The experience of the investors in the operating company preferred stocks was naturally somewhat better; but over the 11 year period they received in all only 71% of the 1156 indicated dividend payable. Their returns also in the depression years fell to substantially lower levels. During 1933 and 1934 they received only 55% of their due, of their preference expectation. In 1935, 54%. During 1936 the percentage paid was 59%, and by 1938, it had risen to 89%.

These figures are compiled from published records, Moody's or wherever we found records to determine payments. The receivership study is based on the scope and accuracy of Moody's reports. The receivership records of Moody's are generally accepted as accurate. The derivation of this is entirely my own. There is no secondary source for that information. I think it is only fair to note, however, that preferred dividends are sometimes passed and made up subsequently; and an objective appraisal of the investors' experience would fall short of what it ought to be if it did not relate the back dividends as they came along. I did that and found that by adding in the back dividends, the investor in natural gas operating company preferred stocks averaged 72¼% of his stipulated dividend as compared with the 71% without giving effect to this judgment.

The significance of this investor experience with natural gas company preferred stocks is made clearer, I believe, if we are allowed to make comparison with the experience of public utility investors with their preferred stock investments. We are well aware that investors have had some dubious experience in recent years, and an absolute figure of 71 or 72% does not necessarily of and by itself mean so much; so I carried the process a bit further in order to get some standards of judgment and measurement. Entirely comparable figures, I was unable to develop. The figures used for comparison purposes are from 1930 to 1936. I think this is justified because there was relatively little disturbance to those relationships after 1936, and that, if anything, by emphasizing the period 1930 to 1936, it puts the electric and other utility companies in a worse position because, as we noted with respect to the natural gas companies, they did recover considerably and were better off in the later years. So despite the fact that I could not bring

this all the way to 1938, I feel that the comparison is conservative and it is certainly adverse to the point I believe I am making.

The figures for the seven years, 1930-1936, which do not give effect to the resumption of dividends which took place to some extent in 1937-1938, show that investors in electric operating public utility company preferred stocks received an average of 88% of the stipulated preferred dividend, and that for the same period, investors in gas operating public utility preferred stocks received over the seven years, 1930-1936 inclusive, over 77% of their dividend commitment. Investors in preferred stocks of composite gas and electric operating companies received 96% of their stipulated preferred dividends over the 7-year period. Even investors in the preferred stocks of composite electric and traction operating utility companies fared very well, receiving more than 97% of the preferred dividends possible over the same period. Investors in the preferred stocks of composite electric, gas, and traction operating companies, apparently experienced some of the results of including both traction and gas service, and averaged on a relatively small volume, probably too small to put a great deal of reliance on, nevertheless 72 percent of the preferred dividends possible.

By comparison of these results with those obtained in studying natural gas companies, the investors in the 1157 preferred stocks of natural gas companies, excluding again those engaged only in public utility distribution, fared substantially worse than the investors in the preferred stocks of public utility companies.

In my opinion, the most fundamental characteristic which has a bearing on the risk and uncertainty which an investor in natural gas faces is the limited economic life which is imposed on the whole investment by the exhaustible character of the natural gas resources. I do not mean physical life. I accept the opinion of geologists and technologists that there are great hazards with respect to the probable physical supply of gas. That seems to be a matter of sufficiently common acceptance to justify my accepting it. I had in mind, however, what I consider a much greater hazard than that of an uncertain physical supply. I meant the economic life of a natural resource as distinguished from the physical life with which the geologists deal.

The physical life might in the extreme be measured by

the time that the last bit of gas was physically exhausted from the ground. Obviously an economic undertaking could never go that far, since the cost of bringing the final supply of gas would be prohibitive. The economic supply consists of that part of the physical supply which has economic significance, that is the part which can be made available at a cost which is equal to or below the price obtainable in the market. Thus, the exhaustion of the economic supply in the case of a wasting natural resource would always be something very much closer at hand than the exhaustion of the physical supply.

It will not pay to exhaust the last bit of natural gas from one's natural gas resources. When we talk about economic supply, we always mean available supply which is really physical supply at a cost.

A pioneering enterprise would certainly involve more risk than an enterprise with a background of experience; and investors would as a practical matter consider it as involving more risk because he does not have the experience basis to go on. Applying that principle to these pipe line companies which built a pipeline system from the Panhandle of Texas to the city of Chicago, a distance of more than 950 miles, the investor who faced the opportunity, if opportunity it be, to invest in that kind of a venture would naturally be concerned with the question as to whether it was economically feasible to transport gas that distance. He would be concerned as to whether continuity of service could be maintained with sufficient certainty to make the enterprise profitable. He would be concerned about the fact that no one else had previously attempted to transport gas at such high pressures over such distances; and consequently, I believe he would be impressed with the large measure of sheer uncertainty, as distinguished from risk, which exists in the absence of any basis for calculating and establishing an opinion as to the degree of risk involved. I think, however, he would be more concerned with the question as to whether or not it would be profitable to transport gas such distances even though he might feel reasonably assured that it was technically possible.

The major question remaining for him would be whether or not the cost of transporting the gas such distances, the very length of the haul, would not eat up the advantage of bringing the product which is relatively low priced at one point to a market as far away as Chicago is. Certainly,

in the absence of any well certified past experience
1158 as to what costs are likely to be, not only immediately but over a period of time in which his investment is helpless and fixed, he would most logically put it down as an investment involving such wide uncertainties as to be beyond calculation as to the appropriate degree of risk to be assigned to it.

Obviously, it is not always possible to know in advance, in a project of this character involving a great deal of technological pioneering, just how it would work out after its projected working out is set down on paper. The economic and industrial history is replete with instances of what seemed to be good technological ideas which did not work out economically.

This was in large part a transportation venture. Transportation is the moving of a commodity from one point to another. This was a specialized transportation investment made for moving a commodity from one rather specific point to another rather specific point, consequently it was under the peculiar difficulty that it had to be entered upon and engaged in as a whole. It had to be built as a pipeline from the source of supply to the only market which was conceived adequate and appropriate to make it an economical venture, consequently no piece meal construction, no approximation of the investment, no trying it out was possible, it had to be a venture where everything was put on one throw, either win or lose, since a half line obviously was no line at all.

From reading the record in this case, I have undertaken to understand the technical difficulties as they have been reported in the record and as they are presented in the records of the inception and development of this enterprise. I understand that the principal technical difficulty which faced the enterprise was to achieve a combination of circumstances in which the investment per unit of transportation capacity could be made low enough so that the difference in price between gas in Texas and gas in Chicago would yield an attractive and compensatory return. Technically, this resolved itself into the development of a type of pipe which had the strength to carry high pressures and which, on the other hand, had a capacity per pound of steel required to transport the volume of gas needed in the Chicago market, and served it adequately on an economic basis. This required a character of materials to be employed in the pipe, a method of fabrication and a choice of

proper size to make the undertaking as a whole economical. The pressures at which the gas had to be transported were significant because by increased pressure it was possible to increase the effective capacity of the line. The pressures could only be such extremely high pressures if the strength of the pipe were adequate. Great strength of pipe, however, could not be achieved by merely increasing the weight of the pipe or it would increase the investment per unit of transportation capacity. So it really was a very complicated, industrial economic problem of finding a balance of all these considerations which would make it feasible to engage in this unique transportation service.

I attempted to acquaint myself with the experiences during the period of construction and operation. I recall as particularly interesting the freeze-ups which developed by virtue of the sudden expansion of certain gasses that were ingredients in the gas transported due to the high pressures at which they were being transported. That was a very interesting one to me and I happened to recall it.

1159 I have heard the evidence here concerning the high stresses at which these lines have been operated, and have read the testimony of other witnesses on that point. It is my understanding that whenever one pushes technological processes to their limits, that it brings with it unusual behavior, and sometimes even freakish disturbances. Thus the effort of reaching high pressures brought with it the thing I referred to as the formation of a type of ice. That principle seems to be true in industry in general. As one pushes to the limit of technological performance one reaches a point where the hazards and risks inherent in that technological phenomenon become greater. In fact, the hazards seem to increase more than proportionately after you get up to a certain point, just as the cost of increasing the speed of a ship multiplies more than in proportion with the increase in speed. (Objections by counsel to the two commissions to above testimony overruled.)

Questions by the Examiner.

I was merely expressing an economic analysis, faced with that kind of technological extensions. I do not know the limit of technological advance in the gas transmission industry. If a person is professionally competent to do any kind of industrial economic analysis, he is aware of the fact that as you push technological development further

you run into the hazards of performance of that character; and if placed in the situation in which it was represented that there were such pushings to the margin and extremes of technological behavior, he would conclude there were economic hazards not prevalent in a number of operations.

Relatively and comparatively here was an enterprise which was proposing to transport gas at unusually high pressures. From an economic analysis standpoint, if someone comes in with a proposal for financing an enterprise and proposes to conduct his operations within an unusual range of previous technological performance, he is appropriately, from an economic standpoint, looked at, to some extent, askance. This is more in the realm of what might or might not happen. There are unknown things that develop at this stage of intensification. Thus, proposals to transport electricity at unusually high voltages fall within the same class of behavior.

Direct Examination Resumed by Mr. Morgan.

From the investors' standpoint, the technological phenomena, of course, are primary, but they are not appropriately viewed as final or determinative. The important fact from the investors' standpoint is what the economic result of such technological pioneering would be. The economic uncertainties involved include all the technological uncertainties and independent economic uncertainties as well. Economic uncertainties are concerned primarily with whether or not the difference between the revenue receivable and the cost necessarily incurred will leave a margin constituting an attractive return from the investment that has been hazarded in that enterprise. These economic uncertainties, therefore, express themselves in terms rather parallel to the technological uncertainties. It becomes for economics not a question, can gas be transported from Texas to Chicago; but, can gas be economically transported from Texas to Chicago? At what investment cost can it be transported? What will the operating cost be? More important possibly even that these questions in a final determination as to whether such an undertaking is economical or not is the question as to the size and character of the market required to make it possible to transport gas economically over such a distance.

The question as to whether a market is in size and in de-

mand characteristics adequate is not easily answered.
1160 It is very frequently a question which is answered only by actual trial which may turn out to be error as well. Finally, the question becomes one as to whether the potential market which is assumed to be there and which may be there can actually be captured in a short enough period of time to make the undertaking profitable. If an effort of this sort had to go through a 5-year or 10-year period of inadequate utilization of the investment before an adequate market was finally developed, the income foregone during that period might be so large that the price which the customers in the future would be willing to pay would never adequately compensate the investment. Thus the time factor involved becomes economically important. The market must be appraised in terms of size, the nature of demand behavior, and how long it would take to be able actually to obtain the market which appears potentially available.

I have read the contract between these parties and Chicago District Pipeline Company. The negotiation of and entering into such a contract would not in my opinion overcome the hazard under discussion. While the existence of a contractual arrangement would in all probability stabilize or establish the limits of the experience or rather establish the nature of the experience within said limits, yet ultimately the security behind the investment in a transportation facility of this sort is the security behind the readily available ultimate market. A contract for the delivery of gas on the basis of an amount which the market would not absorb would undoubtedly be subject to revision or compromise by failure of one of the contracting parties to be able, or to see fit, to continue to assume the burdens of such a contract out of proportion to the possibilities of the market. (Objection by commission counsel to above testimony overruled.)

I am talking about a situation where there is a divorce between the enterprises engaging in various stages of production and marketing of a product, and if there is an intervention of a contractual relationship between these two separate enterprises whose interests are not in common in the matter, there still remains a grave economic hazard, namely, that if the terms of that contract turn out to be other than what is bearable under the economic conditions disclosed, that such a contract is not construed to be very much of an economic protection, and it is very likely to be

modified to conform to the economic possibilities of the situation.

The fact that under the law, the annual value of the money employed would during the development period be carried into the capital as interest during construction would not as I see it alleviate the hazard under discussion, because, merely capitalizing an expenditure does not give you a return on that expenditure, or return the expenditure to you. Capitalizing an investment is merely recording it in a systematic way so that for appropriate purposes the facts may be drawn off and given the consideration which they deserve. Accounting does not give you a return on your capital, neither do accounting transactions return your capital to you.

The capitalization of that item would operate to increase the amount on which a return will have to be earned if the use of that money be compensated. I did not mean to imply that the interest during the development period of an enterprise is not an appropriate capital item. I answered that question in the exact form in which it came, namely, that capitalizing did not do anything about a return on or of your capital and having it on the books does not do
1161 anything about it. Only if it is recognized that you are to earn a return on it, does anything develop which is of economic consequence.

If recognition be given in the rate base in the form of an allowance for going concern value in an amount sufficient to cover the cost of carrying these facilities which are provided in advance of the loading of the line to its normal capacity, such an allowance does not alleviate the risk and hazard I have been talking about. Merely allowing it in the rate base does not change the fact that a project that is constructed under these conditions and circumstances involves hazards on account of the size, the magnitude, the time elapsed during construction and the other factors. Putting it in the rate base merely establishes the presumption that a return will be earned on it; but if the hazard involved in that kind of an investment is not recognized, then there is no appropriate recognition of the hazard element involved in the development of an enterprise under those circumstances.

1162 Ultimately the security of the investment is dependent on the reliability and the certainty of the income available to pay what we have called the wages of capital. This income or wages of capital we have defined

as the difference between revenue and cost, consequently the amount and security of that difference between revenue and cost is dependent upon all of the factors which would influence the revenues of an enterprise or the costs which it would incur. You can think of revenue and costs as blades of a shears or pincers, and the differential which the investor is able to maintain between the two measures the return which he will be able to obtain. Thus his income would be larger if revenues rose and costs remained constant. Thus his income would be larger if revenue remained the same and costs decreased. On the other hand his income might be less even though revenues rose, in case costs rose more than revenue; and his income might be decreased, even though costs decreased, if the revenues decreased more than the costs decreased. There are a great number of relationships there all arising out of the possibility that the cost phenomena may well be independent of the revenue phenomena and vice versa.

To the economic analyst, cost behavior in a pipeline transportation project appears to be highly unpredictable and uncertain with respect to a large number of the aspects of the operation. It would appear for example in the first instance that the cost of an adequate supply of gas is not predictable; that it does not appeal to the economic analyst as being predictable with the assurance that he would like to see; and of course what I mean here is the supply of gas, not the physical supply, but the economic supply that is provided. The cost of a supply of gas adequate to fully economically utilize the pipeline transportation facilities seems to be a highly uncertain matter for the future in an enterprise of that sort.

I do not believe that any economic analyst having any acquaintance with the field of industrial economics would make the assumption that because Texoma owns three trillion cubic feet of gas in a field from which there are hundreds of others producing natural gas that Texoma will ultimately produce that much gas from the field, and through its pipeline transport that much gas to market. In fact I am very certain that he would be disposed and forewarned to consider the question of the cost of an adequate supply or of a reserve as not readily determinable. The rate of economic depletion of such a reserve is apparently not very predictable. I appreciate that the geologist may express confident opinions as to what the physical supply

is and what the rate of physical exhaustion may be; but in my opinion that is a long way from giving reasonable assurance as to what the available economic supply will be at a given time. How much of a physical supply will be economically recoverable, I think is a more important question than the geological opinion as to how much physical supply happens to be there. It involves more uncertainty, in my opinion, than the estimate of the physical supply because it has in it all of the uncertainties of the estimate of physical supply, and in addition the uncertainty as to the cost at which such a supply can be made available, which cost of course limits the economic supply to a fraction of the physical supply.

You cannot get the answer to the question from the production engineer. I would like to add that there are many circumstances where it is probably inappropriate for him to attempt to give the answer. I would say that when the engineer starts dealing with costs, he is entering
1163 a field which involves considerations for which his primary engineering training at least does not necessarily as such qualify him. More loosely one might say that he becomes something of a practicing economist when he moves from the field of technology into the field of costs.

I believe that a competent engineer can offer reasonably reliable estimates as to the efficiency at which various volumes and amounts of gas can be withdrawn from natural supply sources. He can, and if experienced, with a degree of assurance, go further and estimate what the costs of production under any given assumptions of efficiency would likely be. But when he adds the assumption of cost to the assumption underlying technological efficiency, he has introduced a second set of hazards and uncertainties; and the experienced engineer will tread with even less assurance when it comes to assuming what the costs will be than when he is dealing with technological and efficiency factors, which are more strictly in the domain of his own profession. Thus, I say that the economic supply, in my opinion, is far less predictable than the physical supply.

An economic analyst in analyzing this kind of an industry is impressed with the fact that property rights in natural resources on the surface do not coincide with property rights beneath the surface. On the surface those

rights are defined in terms of area by reference to latitude and longitude; but below the surface there appears to have developed a type of communal ownership where property lines no longer confine and segregate the portions assignable to the defined property areas on the surface. Consequently, the subsurface resources are held in what is in effect a common ownership of all those who have rights to the surface of the earth. This leads to all of the usual economic results of common ownership, namely, an indisposition to conserve or protect the whole in which you have only minor or undefined actual interest. This the economist has recognized for a long time to underly the problem of conservation, and is one of the reasons for the wasting of natural resources, whose boundaries are not definable as the legal boundaries of property ownership on the surface.

(The following testimony from transcript page 5750 to page 5758 was admitted over objections by counsel to the two commissions.)

I had occasion to read the Federal Trade Commission record on the natural gas industry. I recall the discussions of the Government investigators with respect to the wasting of resources down there and the reasons for it. Some months ago I read a fairly elaborate record of the vacillating conservation policies in the State of Texas, and the efforts at legislative modification of legal relationships arising out of this particular situation, and I beg to say that I am not unaware of the considerations falling within the field of what we call resource economics. I went that far back in trying to form the ground work for an opinion. I gave consideration to this specific question in arriving at my judgment as to what was a proper rate of return. I was quite alarmed about threats to impose a common purchaser status on the pipeline industry arising out of the disgruntled condition of many of the owners of those natural resources. I think it is something that cannot be overlooked. It is well understood that the owners of rights in communal property are not impressed with the same considerations of conservation, with doing the most economical thing with those resources, as if there were individual and exclusive ownership. It is only the natural working out of the most fundamental economic instincts and behavior, the effort to get what you can for yourself. There certainly

is no inducement for any one or even a part of the owners to conserve, while others are getting more, to
1164 their economic disadvantage. There is every economic motivation to get yours while the getting is good. When faced with a threat of that kind of a realignment or readjustment in the legal relationship, the economic analyst would view it as introducing additional hazards to the enterprise, first in that there is the chance that it would make useless a part of the existing investment which was adapted and adjusted to the source of supply which was envisioned when it was undertaken. On the other hand, the necessity of investing more money in additional facilities would not be viewed favorably, because that would be merely adding to the investment and thus increasing the base under circumstances which are far from attractive from the standpoint of a well conceived, well balanced system, and dictated by considerations of the law rather than considerations of industrial economics.

It may well be that fairly accurate estimates under present assumed conditions could be developed as to the probable minimum cost in the way of capital outlay and operating costs of producing gas and transporting it over a long distance such as that between the Texas Panhandle and Chicago; but all that the economic analyst would be disposed to rely upon in a venture of this sort would be that the nature of the project is one which gives rise apparently to increasing costs. The rate at which these costs will increase involves many uncertainties in that although minimums might be estimated, the possibilities or probabilities of exceeding these minimums are sufficiently great so as to preclude any attempt at forecasting what the future probable cost will actually be.

(October 6, 1939.)

Questions by the Examiner.

I have given the question of depreciation of public utility properties and depreciation behavior a great deal of attention over the last 10 or 12 years. I am not uninformed as to the nature of depreciation of property nor its causes. I have read a great deal on the subject of depreciation behavior in public utility cases, and I am familiar with the physical phenomena which gives rise to depreciation. In my opinion there are fundamental

similarities applicable to depreciation of the properties of natural gas companies and the properties of other utilities, and there is one major distinction. I have studied the characteristics of the natural gas industry with a view of determining what peculiarities there are in that industry which would make the phenomena of depreciation other than it might be in a property such as an electric or manufactured gas company property.

The distinction which I would like to make between the natural gas enterprise and the utility enterprise is one which arises out of a relatively simple matter of distinction and observation which I think can be drawn without getting involved in any of the technical details. I accept it as common knowledge and accepted fact that the natural gas industry supplies are exhaustible. That distinction carries through in an important way in its influence on maintenance and depreciation behavior.

Direct Examination by Mr. Morgan Resumed.

It is not expected that the maintenance and depreciation expense, and by depreciation I mean physical depreciation, will continue during the later life of physical properties such as are employed in a natural gas company at
1165 the same level as during the early life. As an economic analyst, I would not assume that costs incident to maintenance and depreciation would continue at the same level during the later life of a property of this sort as before. I mean a natural gas property, the entire undertaking because economically it is interdependent. The transportation facilities are dependent upon the economic life of the gas field, consequently it would apply to the entire investment.

I am speaking of the physical properties as distinguished from the natural gas itself, although the exhaustibility of the supply underlies the entire phenomena. The economic and financial analyst is impressed with the fact that the property depreciates more rapidly as it reaches an older average age. This is a commonplace phenomena, in fact something that everyone experiences with respect to the technical behavior of properties and goods that he employs and uses. It clearly seems to be the fact with respect to composite industrial properties.

The distinction with respect to a natural gas property which I wanted to bring out was that in an undertaking of a limited life; the most economical way of taking care of maintenance and depreciation is not the same as the most economical way of taking care of maintenance and depreciation in a property of assumedly unlimited life. The reason for that principle is this, that whether or not it is profitable to make retirements and replacements or to spend large sums for maintenance is determined in part by the length of time over which you expect those retirements and replacements to continue to serve. To put it in simpler language, a house owner does not wisely or economically repaint his house the year before he is going to tear it down, as a normal experience. The expected termination of the enterprise as a whole, therefore, leads to deferring more and more replacement as you approach the final termination of the enterprise as a whole.

As a result of that economic disposition to defer replacements as you approach the termination of the project as a whole, the average age of the composite property of this kind of an enterprise tends to rise, because you do not reach that normal life cycle of replacement which you do in a property of unlimited life. The economical thing to do is to defer or not to engage in retirements as you approach the end. Assume that you reach within 3 or 4 years of the end of the life of the property, and it would be economical to make a replacement of an item of property under normal conditions, but the item of property that you would replace is one in which you would have to buy 15 years of future use. To buy the 15 years of future use for a probable 3-year life is more uneconomical than to suffer with the existing equipment, consequently there is the economic disposition not to engage in the replacement at all and to suffer the higher operating and maintenance expenses during that time rather than add to the capital investment, all of which operates to raise the average age of the property.

Industrial economists usually follow the alternative of suffering with a higher maintenance expense rather than making a retirement and a replacement and incurring higher capital costs. The problem of the industrial economist as a manager is to choose between suffering that higher maintenance expense or the capital expenditure of

replacement—whichever is the least expensive for the operation.

1166 In a property of unlimited life you would not hesitate about choosing to make a replacement, because you would expect to be able to use up that replacement over its life, and then it would be economic; but as I pointed out, if you had only 3 years more to go on the whole, you are not going to be disposed to invest in a 15-year life to eke out that 3 years unless you technically have to. You would choose to suffer with the higher cost of using an older depreciated unit of property, not that it is so efficient, but it is more economical than to suffer the waste of capital involved in reinvesting in long life property. That is a fundamental distinction between an industry with a terminable point and an industry in which it is presumed you will go on indefinitely.

A depreciated facility costs more to operate as a normal experience. A depreciated facility will involve you in greater maintenance expense. You experience it with respect to an automobile or with respect to any kind of physical property. When I am reaching the point that I am unable to use an automobile any more I probably would not be disposed to buy a new automobile even if my depreciated vehicle might be using a tremendous amount of gasoline and a lot of oil, and might be requiring a lot more maintenance, because I would well consider that a less wasteful experience than to take on a new car. The automobile illustration cannot be carried too far out, because presumably an automobile has an alternative sales value; but a property of this sort which has a fixed and specialized use, which is specialized for its purpose and which has a physical life in many of its units far in excess of the economic life, and which is immobile, has no such alternative application. This is a factor which I think is unique with respect to this kind of an undertaking, and I took it into consideration in arriving at a rate of return for these companies. The testimony here has been recently concerned with the reasonably anticipated behavior of costs, the character of the probable future cost experience, which is, as I indicated, one of the fundamental factors to be considered in the problem of the probable wages of capital that can be earned in the future. Whether or not an investor would be willing to put his money into a project of this kind on the assumption that taxes would remain level, I would say depends in part on how informed the investor is and to

what extent he seeks information. I could appreciate that there are small investors who might be approached by a security salesman who would not have the basis for judging a phenomena of this sort. That is not the kind of an investor that should be interested in investing in a pipe line from Texas to Chicago. I merely wanted to qualify my answer by that understanding in the next instance. The informed analyst would be rather hesitant to accept any estimates based on the assumption that taxes will remain at the present levels. He knows that the trend of tax levels has been rising and continues to rise. He knows that there is not much in the offing to suggest that there is going to be any change in the trend of taxation. On the basis of past behavior and present outlook as an economist, I would be very skeptical of estimates which assumed that taxes are going to remain at present level. (Objection by Commission Counsel overruled.)

The record shows that these pipelines have been operating for the last several years at a very high load factor—for the last three years prior to 1939 at 92 per cent or 93 per cent of the total estimated or rated capacity. From an economic standpoint, any enterprise which has to produce its wages of capital, its income, by an intensification of its utilization factors is considered as being involved in hazards which would not be present if such were not the case. To put it in simpler language, a dollar of income earned as a result of high load factor and intensive use of the plant and facilities is, from an economic standpoint, a dollar earned with much greater risk and uncertainty than one which is the result of merely taking the cream of the market at a higher average margin of profit. Any intensive exploitation of a market leads to hazards which are not present in taking the more readily available and the more certainly retainable portion of the market. The lower rate of utilization by just taking the more desirable classes of customers or the more desirable classes of business does not introduce the hazards of the marginal customers 1167 dropping away from you, and does not introduce the hazards of the marginal business of the customers in general dropping away from you. In the case of depression these marginal customers are likely to be the first to go, and the marginal uses are likely to be the first to be given up.

Markets in which the competitive advantage, for example, is small, are much more vulnerable than markets in which

you have a clearer and stronger foothold. The economist analyzes these features and views an undertaking which has to earn its dollars by such intensive marginal efforts as more vulnerable to the impact of changing economic conditions than one which resorted only to trying to get the more reliable portion of the business and which in fact could make the necessary rate of return by only taking the more reliable portion of the business.

That distinction carries through public utilities, in my opinion, very clearly. It s not an uncommon position to take at all to say that a given electric company has a substantial proportion of industrial business, therefore look out for it. It does not have the balance and the certainty of one which confines its efforts largely to the more reliable domestic business, for example. (Motion to strike above answer by Commission Counsel denied.)

A manufactured gas business, for example, which is in a position to earn a satisfactory return from a back log of the manufactured gas business in the range use of gas in the home, in my opinion reflects one type and degree of hazard and economic risk; but if a gas company goes out, for example, and assumes to sell gas for house heating purposes, the income which it obtains from that additional business is an income which must be appraised in an entirely different way than the income earned from the solid and reliable domestic range business.

To revert once more to the electric industry, when the electric industry goes into the range business and starts getting out on its thin ice, so to speak, or in the hot water heating business, it similarly receives from a class of business income which must be valued on a different basis than the income from its most reliable sources.

It has been my opinion for a great many years that a refinement of income valuation is called for on the basis of the character of the business that an enterprise does; and it is no extreme and undue refinement, in my opinion, to recognize such readily distinguishable classes of business as domestic and industrial, and even to divide domestic business into that part of the business which a given type of company has a clear control over and a hold on from those in which it is distinctly in the competitive area. (Motion to strike by Commission Counsel renewed and denied.)

I have elaborated the answer to the question as to whether, in my opinion, there is any recognition to be given from the standpoint of hazard and risk to the fact that a

company has to operate at a high load factor and that it has to go and get additional classes of business to operate at a high enough intensity to make the income which it is making.

I have been using "load factor" in the discussion probably as synonymous with "utilization factor." Load factor more narrowly should probably be defined as the ratio of the average demand to the maximum. I was here using utilization factor really more accurately, namely, the ratio of the average utilization to the plant capacity, which
1168 may be a little different from the peak which it reaches. (Motion to strike by Commision Counsel overruled.) The income obtainable from industrial sales is not as reliable and not as certain and not as dependable, and therefore would not be capitalized at the same rate as the income from the more reliable, certain and dependable domestic service.

Cross-Examination Interposed by Mr. Slaff.

There are a number of small manufactured gas companies which probably have an insignificant amount of industrial or even commercial business. Larger gas companies attempt to obtain such business if they can obtain it at compensatory rates. That illustrates perfectly the point that I am trying to make, that when you have a gas company that goes out and gets some additional income from that kind of a source, it is not appropriately viewed as having the same value as income obtainable from other sources. The fact that they do it and try to get what income they can has not necessarily anything to do with it. I think substantially all manufactured gas companies secure some revenue from other than domestic purposes. I have in mind one company—a little gas company at Marshfield, Wisconsin that has no industrial gas business.

I have not had occasion to examine page 2 of Mr. Gilman's exhibit. I do not know his testimony other than the industrial section which I looked at after he gave it. I have not had occasion to look at that exhibit.

Direct Examination by Mr. Morgan Resumed.

I did not mean to imply that there was anything inappropriate about trying to go out and get industrial load or any kind of load which was incrementally compensatory.

I was simply making the basic observation, which is absolutely valid in my understanding of economics, that the source and character of the income is a factor to be considered in the rate at which it is to be capitalized, and that income derived from the more hazardous sources is properly classed in the higher rate than income from safe and secure sources.

Obviously an investor would be impressed with any demonstrated experience such as the falling off of revenues, mostly from industrial load, as between the years 1937 and 1938, of more than three-quarters of a million dollars; but a really qualified analyst would go further than demonstrated experience and attempt to calculate what the probable experiences of an enterprise of a given type of market and engaged in a given type of service would be. I would not consider it adequate to rely merely on the experience of a relatively short period of time. The fluctuations on account of the economic cycle is only one of the factors which would be involved. A business, for example, which falls within the segment of competitive business for alternative uses is subject to decline due to factors other than those arising out of the business cycle. But, a slight change in the technology or the efficiency of appliances for utilization could upset a delicate balance in the competitive area and throw you out of that particular field.

Summing up all of the elements that I have discussed here, it seems to me to be the reasonable economic expectation that higher unit costs of production would result in the future, and that is a circumstance that an investor would consider.

1169 I am not basing that statement upon the assumption that there will be rising prices in the future. I made no assumptions with respect to rising prices at all. I was not relying upon any forecast as to the probability of price behavior. The analysis I made is valid irrespective of a changing price level. That is an entirely different factor. The possibility of rising prices has been a threat for some years now. In my opinion we have engaged in various public and private economic practices which have laid the basis for a tremendous possible rise in prices.

I meant to discuss the probability of rising prices. "Possibility" is always present irrespective of the conditions with respect to a phenomenon such as changing price levels. A great many economic factors have developed in the last six or seven years making for a great probability of a rising

price level. That probability of a rising price level has been recognized pretty generally. A tremendous rise in prices has not as yet occurred, and in my opinion probably will wait upon the development of one additional factor. We know that the full utilization of one or the other of the factors of production is probably necessary as a requisite to a rise in the price level. Even though prices seem merely to go up, actually there must be changes in the relationship of the supply and demand before prices are affected. The demand may well be affected by the threat of the supply of money, a threat of inflation or that sort of thing. I did not mean to get involved in all of the factors which might be back of a change in the supply or demand. I simply meant to point out that prices do not just rise. There must be changes in human opinion and willingness to buy and sell. One of the requisites of the development of that kind of a condition is the pressure upon the available supply of some one or more of the major factors of production, and that seems to have been what is primarily lacking during the last seven years.

The outbreak of the War, for instance, furnishes possibly the final remaining circumstances needed to bring the process to fruition for which we have well set the stage, namely such utilization of our industrial production capacity, such demand upon resources as require producing those products which can only be provided at higher costs, and which will bring us to the point where we will actually experience this rise in prices which a great many economists have considered probable for a number of years already.

I consider one of the most important differentiating characteristics between these enterprises and the public utility gas companies to be the lack of the control over the market; and I use the word "control" in a general sense. The fact that the production and transmission company dos not actually exercise what I think of as the business control over its market is an adverse factor. The inability to deal with the ultimate market in a manner which is most advantageous to the production and transportation company puts limitations on what it could do either to work this out to its own best advantage or in case things are going bad, to protect itself as effectively as it might be protected.

I think the situation is clearly comparable to that of a manufacturer who finds that his outlets, his contact with the ultimate consumer, is only through the buffer of a

distributor or a limited group of distributors. What they do determines how effective he can be; and the tendency has been in large scale business in this country to try to break through that buffer in order that the producer who is vitally interested in the volume of distribution may actually conduct his business affairs in such a way as to achieve the optimum result.

1170 *Cross-Examination Interposed by Mr. Booth.*

I said I used the word "control" in the business sense. That the producer did not have the discretionary power to control the manner in which the market would be exploited, to determine the shape of the rate curve, to determine to what extent he would engage in the exploitation of a given class of business. Suppose he is of the opinion that the house-heating business could be very well developed in a given market; that in his opinion it would pay to spend a considerable sum of money to develop the househeating business, but those in the control of the market may not think so, and consequently do not put themselves out to develop that particular part of the market. What I meant by lack of control is that a producer is not in a position to force the enterprise in control of the market to go out and develop the market as the producer would like to have it developed.

Direct Examination by Mr. Morgan Resumed.

In my opinion an investor in the securities of defendants would be impressed and should be impressed with the possibility of direct competition by a raiding line, as that term is commonly used, or the discovery of a different source of supply at a shorter distance from the City of Chicago than the Panhandle of Texas. Direct competition would apparently result in either forcing lower prices for the product of the existing facility, or a dividing up of the market possibly; and a division of the market and its effect on the industrial and internal economy of such an enterprise would mean a lower utilization of its facilities, a lower revenue volume, without proportionate reduction in costs, and consequently a lower income. Apparently there are one or two cases already of proposals for building competitive natural gas pipelines in the United States

who are attempting to obtain or have actually obtained approval of the Federal Power Commission for the building of such competitive lines. As I understand it, there is one of which there has been approval, the case in which Commissioner Manly dissented, and another case is under consideration where an application has been filed with the Commission.

A threat of direct competition in an industry in which the capital is so specialized and so long-lived and so immobile as in this kind of an industry is viewed as particularly hazardous.

Another factor which must be taken into account is the competition in which natural gas finds itself with such fuels as fuel oil, distillate, coal, and things of that sort. This is certainly true of a company like defendants, 40 per cent of whose volume of gas is sold for industrial purposes. Any change in the relative position of competitive service or competitive fuels ought to be taken into consideration. Any change in the relative position of such competitive fuels would have the same general effect that the introduction of a directly competitive line would have; and that is that a loss of any substantial portion of the business due to the relatively more favorable price of oil or coal would reduce the volume, which is very significant for this particular enterprise.

1171 'In my opinion there is a distinct threat in the aggressive market policies and practices of the electric industry. I have testified before with respect to the future of the gas industry that I consider it distinctly prejudiced by the apparently increasing success of the electric industry in capturing additional portions of its markets. The policies and practices of the electric companies are becoming more of a threat all the time under the pressures under which they are operating in the United States. The pressure, for example, to show a large volume of consumption per customer leads them to seek business which may have a very small margin of profit in it, such as the electric range or the electric water heater, but which builds up the consumption per customer. This also has some direct economic advantage since it puts the customer at a lower point in the rate schedule and thus makes him available for the buying of other services at lower prices in the rate schedule.

The pressure on the part of government to force do-

mestic rates down and to achieve lower average rates in the electric industry, is, in my opinion, prejudicial to the gas industry because it puts an added pressure on the electric companies to seek to invade the common ground between the two services and take a larger proportion of it. In general I am of the opinion that the management of electric companies is more aggressive with respect to fighting for the common market than are the gas companies. I cannot particularize, but this is the general observation for which I have been on record for a great many years. I have made further studies as to the factors that necessarily enter into the arrival at a proper rate of return, that is, the factors that I saw constitute hazards and risks confronting these companies. I believe in building a solid foundation of the most fundamental factors and working from those to the more immediately and directly observable applicable evidences. (Motion by Commission counsel to strike overruled.)

After carefully considering all the fundamental factors, I moved to consider the objective form in which these factors expressed themselves. I studied the market behavior of investment opportunities in general; I have studied the market behavior of investment opportunities in public utility industries; I have studied the market behavior of investment opportunities in the natural gas business; I have informed myself as to the character and conditions and circumstances under which the natural gas industry has been able to bargain for its capital supply.

In connection with my academic work as well as my consulting work I am professionally under obligation to keep informed about the general behavior of the financial markets and the earnings of business in general, as well as those particular lines of endeavor which happen to be represented by those consulting me. I take every occasion and opportunity to do that.

I have examined pages 6 to 15, inclusive, of Exhibit 150, and I believe I understand the character and import of the facts offered there. (Objection by Commission counsel overruled.) I would consider an exhibit of this sort of fundamental value in establishing something of the metes and bounds or in staking out the limits, so to speak, of the earning power of industrial capital. I would not be impressed by the results of any particular classification; neither would I consider that the result of a summation of

this sort necessarily posits a point that is the proper rate of return for the natural gas industry or a particular company in the natural gas industry; but I think it serves a useful purpose. In fact, the device is rather commonly employed for orienting the approach, for giving perspective, and for setting some of the limitations within which judgment would tend to find expression. Without anything of this sort one would be relatively helpless as to any understanding of what the limits really are in industrial enterprise. I have attempted to make an
1172 appraisal of that evidence as I would appraise it.

Having access to pages 6 to 15 I looked it over carefully and have some opinions about its possible validity and the extent of its possibly appropriate employment. I made a few checks on the fundamental statistical validity of such an array. (Objection by Commission counsel overruled.)

I noticed in viewing this array of average returns on invested capital for the period 1934 to 1937, that the array reflected a very considerable extreme of items running from .57% up to 37.69%. Any statistical array which affords that kind of an extreme is always worth critical appraisal to determine whether or not an averaging of that kind of an array is an appropriate treatment. My own approach to testing such an array would be to determine the representativeness of various levels. Consequently, within the limited time and energy at my disposal recently, I just arrayed these rates of return from the lowest to the highest in an effort to see whether or not there was any distinguishable mode or representative level which might be more valid and which might either support or cast some doubt on a simple mathematical average.

In the first step of determining a mode on a 2-point interval no clear mode is indicated. In the second step of determining a mode on a 4-point interval no single mode is indicated, but 10 items and 9 items, respectively, fall within two adjacent groups, giving us an adjacent grouping of 19 out of the total number of items available. That range is from 6.16% to and including 13.98%. That seems to be the dominant group within the array. Just to deal with keeping an even number of items on each side, because 13.98 appears twice, I have taken the central 17 items of this array, which leaves 10 on either extreme and is more representative possibly. In other

words, excluding the extremes on both ends, a very common statistical testing device, I found that a simple average of a more homogeneous segment works out at something over 10% in the average, which is fairly close to the 11.04% obtained by taking the series as a whole.

The second point of appraisal appropriately made of such an exhibit, I think, is with respect to the period 1934 to 1937. I do not consider the period 1934 to 1937 representative of the full earning power of industrial capital in general. It is a matter of common knowledge that the industrial earnings in the period 1934 to 1937 were relatively low and unsatisfactory to business.

Cross-Examination Interposed by Mr. Slaff.

It is understood that we have been in a depression during this period, and if depression means anything, it means a low level of industrial earnings and industrial activity. The output of the industries, the profits of the industries, the employment of labor, all bear evidence to the economic conditions maintaining since 1930, and the period of 1934 to 1937 still includes too large a proportion of the years in which those unsatisfactory economic conditions prevailed to reflect representative earning power. It is pretty difficult to estimate whether this four-year period would be representative of the decade from 1930 down to the present. 1938 is not in there, and 1939 is not in either, which were years which represented some considerable improvement, in many lines at least. If this could have been extended to 1938 and 1939 I believe that the ratio shown here would be higher than it is with including merely 1934 to 1937. I do not think
1173 it is representative of the nine or ten years from 1930 through 1939. This decade is not comparable to the period 1923 to 1933. (Motion to strike above testimony by Commission Counsel denied.)

By the term "normal" I meant it in no other sense than it is commonly employed in the literature of prosperity and depression. Our references are always, of course, to some past period. We do not think of normalcy with respect to the future. It refers to what has been a representative expected earning power in the past within the memory of the people who are now evaluating the present and looking into the future. Thus, with respect

to indices of price levels or with respect to purchasing power and that sort of thing, it is common always to look back. In the Bureau of Labor Statistics, indices are based on 1926 in the name of normalcy. This is not a term of such definite and specific meaning that it would apply to earnings experienced in any particular period of the world's history.

I am using it in the same sense in which it is ordinarily used, and I appreciate that that is the way the term "normal" is used. We are prone in this period to think of much that happened to us from the late war to 1930 as normal. That would give you one norm. Then you could go back and speak in terms of a 20-year period, and you would have a longer normal period. I meant essentially the pre-depression experience. And for a larger period than the past-war pre-depression decade of say, 12 years. And for our earlier comparison the four years here are not normal, as they reflect the continued depression period from 1930 through 1939.

Direct Examination by Mr. Morgan Resumed.

I would like clearly to go on record that thoretically the use of an investment base is for rate of return determinations invalid in that an investment figure is by definition always a past figure, and the valuations which are of final importance in this kind of an undertaking are present value figures. I have testified to that on other occasions, and I believe that is the correct way to do it. That would certainly be a disqualifying fact if we were concerned here with one company. If this were one company and without any indication as to when it had made its investment, and under what conception of accounting records it had recorded this investment, and on what principles it was continuing to place certain reliance on past figures drawn from books of account, for any one company that would invalidate any comparison with the past. But it is to be noted here that we have not one company or just a number of companies, but what purports to be a cross-section of American industry. Consequently, it should be observed that what is known as the year of inception of American industry is not some one year, but that the date of inception of a cross section of American industry undoubtedly spreads itself over the

period of development of American history; so we get a synthesis of all sorts of different periods, high periods and low periods, of original investment which are undoubtedly reflected in the investment figures carried by this cross section of American industry; in some of the last ten years there was relatively large investment reflected in those figures. There would not relatively be as much investment in the last ten years as during the higher priced periods which preceded it.

The year of inception would be spread over all price level history, including not only the highs and the lows, but the years of expansion, so that the incremental investment of these enterprises may safely be presumed to be spread over such a substantial period and vary sufficiently to substantially negative the probability that this investment reflected here was all at the bottom of the pit or at the top. In fact, the behavior of investment figures and cost new figures with respect to many industries appeared to come to a kind of stalemate about 1931. That is, the public utilities—electric companies in particular—which were fairly early in the history and which developed in growing communities, found that by 1931 the question as to whether investment cost or present cost was used became almost a matter of indifference. That is, a coincidence appeared to be developing at that time which was something of a consideration in connection with rate matters and others.

(At this point preliminary cross-examination by Mr. Booth of the witness to determine the competency of the witness' statement) "That the question of whether investment values are on the average still high, I think could be resolved to a fairly safe estimate that yield on the present value of the investment of these enterprises would show a higher percentage." (The following testimony appeared: The witness also stated that he had not studied the cost records and investment value of any particular company but that he had studied the cost records and investment value of many companies; that he is acquainted with the volume of those right-downs and the industries in which they have occurred and that he has a basis of comparing the extent of right-ups and right-downs in industrial businesses with the extent of such right-ups and right-downs in the public utility business; that he had spent two years studying in particular the capital revaluations of public utilities.)

Preliminary Cross-Examination by Mr. Booth.

On page 6 of Exhibit 150 the first classification of corporations is Automobile Parts and Accessory Manufacturers and that is composed of 40 corporations shown on page 7. The name of the first corporation is Ainsworth Manufacturing Corporation. I don't know where its business is located. I have never seen its property. I do not know what its property consists of. I do not know what buildings comprise the Ainsworth Manufacturing Corporation. Nor do I know the present condition of its property.

The next one is the Aluminum Industries, Inc. I don't know where its business is located; I have never seen its property; I have never made a valuation of its property; I have never talked to anybody that has made such a valuation; nor have I ever talked to anyone who talked to anyone else who has made a valuation of its property. (Objection by counsel for the company.)

I do not know the total capital investment in the Aluminum Industries, Inc. nor do I know when the investment in that corporation was made.

The next company, the Backstay Welt Company, is another company with which I am not familiar with its property. I do not know where its property is located; what its properties consist of; what the total capitalization of that company is; when the capital was invested; nor do I know the present condition of its property.

My answers would be the same with respect to each and every one of these corporations on pages 7 to 15 of Exhibit 150, with the exception that I cannot say that there are not some that I may not have examined. (On motion by counsel for the two commissions, the sentence first above was stricken.)

(At this point counsel handed the Examiner a document entitled "Natural Gas Pipeline Company and Texoma Natural Gas Company Data Concerning Rate of Return—Witness H. B. Dorau" with the request that it be marked for identification. At the Examiner's direction the document was marked Exhibit 152 for identification.)

Exhibit 152 was compiled and prepared by myself or by my assistants under my direction. The chart on page 1 reflects the changing yield to maturity at market prices of Moody's 40 Public Utility Bonds, which are divided

into four series of ten selected bonds each by rating classification. This chart is composed of yields reported by Moody's Statistical Service for the Aaa, Aa, A, and Baa classifications. It should be understood that each of these series includes at each time ten bonds. It should also be understood that Moody's chooses to change the content of the series from time to time as they feel it necessary to maintain comparability or because securities drop out. In this chart the vertical axis measures the yield to maturity at the market price in per cent per annum. The horizontal axis expresses the years by months in the period 1919 to 1939.

The legends Aaa, Aa, A, and Baa are the identifications which Moody has developed to indicate its highest grade bonds, its second highest grade bonds, and its third and fourth grade bonds. The Aaa bonds are the highest grade of bonds.

In my opinion a chart of this sort affords a background for an understanding of the changing yields of selected public utilty bonds. Thus it affords a basis for comparison, a point of departure, so to speak, for coming to a conclusion as to the relative position of securities of natural gas companies.

I would like to observe that this is the kind of chart which is often used as a point of departure in a study of necessary supply price of capital and that I employ it only as such a point of departure. I do not mean inappropriately to propose to rely on this to reflect the necessary rate of return as such, because a chart of this sort does not give the full range of risk classifications, and of course, as is obvious from the title, this is a chart of public utility bonds. Obviously the risk element in the preferred stocks or common stocks are not intended to be reflected.

1175 *Cross-Examination Interposed by Mr. Booth.*

By the term "point of departure" I mean a beginning point, a starting point. I do not mean a leaving point. This is the beginning and not the end. This is the taking-off place from which we start.

Direct Examination by Mr. Morgan Resumed.

The curves in that chart give a background picture of the changing levels of the yield return on the four different classifications of securities of different risk characteristics. It is readily noted that the levels of yields of securities of these classifications have changed markedly from period to period. There is the post-war rise in 1920 and 1921, followed by a period of declining yields on all classes, reaching a low point in 1928, followed by a gradual rise to 1931 and a marked rise in the security classes representing the larger degree of risk through the years 1932 and 1933, after which the returns declined again to the levels indicated at the last point about the middle of 1939. It is significant that the two higher classes of bonds seem to show less reaction to certain temporary conditions than the other two classes, particularly in the periods 1920 and 1921, and 1931, 1932, and 1933, and about the first of 1938. That is a characteristic of the behavior of the yields on these classes of bonds of different risk characteristics which is worthy of note. I attempted to direct particular attention to that aspect on the revision of the chart at page 5.

The figures shown on pages 2, 3, and 4 are merely the supporting data which is incorporated in the chart on page 1.

Passing on to the chart on page 5, it will be readily observed that that chart is the same as the one on page 1 with the addition of a fifth curve. This fifth curve, which is found in the dotted line and running generally toward the bottom of the chart, measures the difference at each point between the yields on the Aaa bonds, the highest grade, and the Baa bonds, the lowest grade shown. This I consider significant because we are dealing here with four classes of bonds of different risk characteristics; and the changing amount of risk differential which develops throughout a period such as is recorded from 1919 to 1939 I believe is significant.

It will be noted that the difference between the yields of the Aaa and the Baa bonds rises during the period of uncertainty in 1920 and 1921 and declines to a low point, in 1928, then rises substantially to 1931 and sharply through 1932 and 1933 as the level of bond yields rose during that period. Since 1933 the difference in yields between the class of highest risk and the class of lowest

risk declined to a fairly low level, and this occurred again in 1936, from which, however, it jumped up rather quickly to a fairly high level in the early part of 1938. In fact, in the early part of 1938 it reached a higher level than at any time in the series except for the middle of the depression period of 1932 and 1933. Since the forepart of 1938 that differential index has again declined to a point which is still higher than the low point reached in 1936, and it is interesting, and I believe significant, that the differential in 1938 remained higher than it was throughout the period, say 1924 well into 1930.

1176 I think the changing differentials here are clearly indicative of the greater sensitivity of the series representing the higher risk securities to the uncertainties and the fact that those differentials still maintain the relatively high levels compared to the period of which we choose to think as the normal prosperity of the Twenties. The figures on page 6 support the differential curve which was added to chart 5.

The chart on page 7 represents another variation of the chart on page 1. With the exception of the fifth curve at the bottom it is identical with the chart on page 1, except that in comparing here the absolute difference between the yield on the securities of the highest grade and of the Baa grade it seemed only appropriate to determine what the relative significance of that difference was. I was perfectly aware that the absolute difference would fluctuate merely by virtue of the changing level itself, namely, the mere magnitude of the numbers here contained would result in an increase in the absolute differential as the level of the four curves moved up from 4% to 6% or higher. It seemed only appropriate that we make a determination as to whether the relative significance of the differential changed in harmony with the absolute change; in other words, whether the absolute change was more or less than proportionate to the level at which these securities were selling.

The curve labeled "Ratio Baa to Aaa" at the bottom of page 7 is a recording of that ratio. The method of determination of the ratio is simply to impose the yield at each point of the Baa classification over the yield of the bonds on the Aaa classification and determine the ratio. Thus, when it reaches a level of 2, it is two times as much. This curve shows a different character than the absolute difference curve in that in the period 1920

to 1921, when we had a fairly substantial rise in the absolute difference, there is now no great rise in relative difference, indicating that the rise at that time in the absolute difference was probably only proportionate to that rise in the level of yields itself, thus disclosing what I consider one of the limitations on an absolute difference measure as an index of this circumstance.

Thus the curve holds fairly steady all the way down through 1929, begins to rise at the end of 1930, and then indicates that the increase in the absolute difference was more than proportionate to the rise in the level of the bond yields as a group. Some recovery took place following 1933, through 1934, and the new low point was reached in 1936; that is a low following the depression years of 1932 and 1933, with a rise in 1937 and some recovery in 1938. But it is interesting now to use this relative measure of the risk differential to note that even though there was a recovery following the years 1932 and 1933, and even though there was some recovery following the rise of 1937 and the forepart of 1938, that the level at which this differential holds since the depression continues to be well above the level which it held before the year 1932. In other words, the relative significance of the risk differentials since 1932 and 1933 has not declined to the levels prevailing during the period 1919 to 1931.

I interpret this as evidence that investors are placing a relatively higher significance on the risk differentials that exist than they did during the period 1919 to 1931.

1177 There is a great deal more that can be said in the interpretation of a chart of this sort. I would like to make it perfectly clear that this curve is the ratio curve, and that any ratio curve is of course influenced by both of the factors used to develop a ratio. Thus, the behavior of both the Aaa bonds and the Baa bonds enter to influence the ratio result. It can be looked at either way, that the Baa bonds have done it or that the behavior of the Aaa bonds have made the ratio what it is. I think that is perfectly clear to anyone who understands the ratio relationship.

If we wanted to carry this analysis further, we could measure that differential as between every one of the classes and the Aa bonds, for example. From observation, it probably can be seen that in general a similar result, although not as magnified of course, would be portrayable.

It simply means that if it were disclosed by such a refinement that the relative differences were maintaining a similarly or proportionately high level that the valuation of the the risk between A and Aa or between A and Aaa would represent a relatively larger consideration in the investor's appraisal of those securities at that time than it did at the earlier period with which we are comparing it.

The figures on page 8 represent the ratios of Baa to the Aaa.

The chart on page 9 is but the superimposition of the preceding curves of the absolute difference and ratio difference on one chart to facilitate ready comparison of the behavior of an absolute difference curve and a relative difference curve. It is merely a combination of the other three charts. And for visual purposes, this makes it easier for anyone to compare the behavior of the absolute difference and that of the relative difference. It shows that the relative importance of the differential yields does not fluctuate as widely as the absolute difference, thus indicating the effect, in my opinion, of eliminating the influence of mere magnitude of numbers on such a measuring device.

Passing on to the next chart, appearing on page 10, the vertical scale is again the yield percent to maturity as before, but the horizontal scale is only intended to indicate year-end points for this purpose instead of the monthly points as in the more elaborate preceding charts. Thus, the prices and yields for the securities developed on page 10 are based upon year-end or nearest to year-end prices. The reason for doing that was simply a reduction of the tremendous amount of labor involved in the calculations of this sort; and I think for purposes intended by this chart, a single point is probably adequate. I took the year-end or nearest to the year-end, probably never going out of the month of December or the nearest price available in the year.

It is a pretty well understood fact that the Moody Series which I used in the preceding charts and which are so commonly used as a point of departure or beginning, represents a highly selected bond series group. The
1178 standards of selection are fairly rigorous, I understand, and I rather doubt whether they are representative of the levels at which securities of these classes in general are sold; so in order to take a step in the direction of greater reality and representativeness, a number

of series were developed here just to see how far we would depart from the traditional levels which are so often referred to.

The first series on chart 10 reflect the yield at the year-end or the last available price of 55 gas and electric company bonds. I might say that one additional feature employed in this chart is the effort to maintain continuity of the bond in a series, actually to attempt to keep the same group together and see what happens to it. Some analysts have some doubt about the changing content of a series like Moody's series, so a great effort was made to obtain a continuous series. A great effort was also made to develop as large a continuous series as was possible; and I want to say that that involved a matter of great difficulty in that bonds have a habit of inappropriately dropping out and disappearing and spoiling a series, making necessary recalculation backwards to maintain a uniform base.

The heavy solid line represents therefore the yields as indicated for 55 identical gas and electric company bonds. These are shown on pages 15, 16 and 17.

The heavy dashed line represents the bonds of 18 manufactured gas companies, and the same identical bonds throughout the series. The light solid line represents the changing yield on 24 public utility preferred stocks; and the light dashed line represents 22 of those 24 public utility preferred stocks. The reason for encumbering the chart with that fourth curve was because two of those preferred stocks that were in the 24 so dominate the picture that it seemed only good and fair statistical procedure to show what the curve would be like with those two eliminated. I probably failed to mention that these are weighted average curves; and that is why the 22 and 24 stocks series are developed, because of the weight of the two preferred stocks in size so dominating the picture. The two preferred stocks referred to are those of the Pacific Gas and Electric 6 percent cumulative 1st preferred, and the Consolidated Gas $5 cumulative. They were in volume so large that we wanted to be sure that the character of the curve was not the character of those two preferred stocks.

The fifth line is introduced again for the purpose of base comparison. To depart from the exclusive use of Moody's series, I took recourse to the Standard Statistics Index of Yields on their highest grade bonds, and

recorded that at the bottom of the chart to establish something of a point of reference, a base line from which to judge the comparative level of these indices, representing different classes and different risk characteristics. I don't know how many bonds are represented in the Standard Statistics group. The Standard Statistics does not publish the content of their A-1 plus series and refuse to take on the task of giving it. I want to say for the record that I tried to get it. I have tried before and failed before. I would like to say this about it, however, for your information, that it is a larger series than Moody's 10 Aaa. They are willing to say that they include a large number of bonds falling into that classification, but they won't tell us how many or which ones.

1179 *Cross-Examination Interposed by Mr. Slaff.*

This is all the same series. It is not weighted. In case you are confused on it, I will have to make the record clearer on it. Their series is not weighted, and it is the same identical series. There is not much point of weighting in that, because it represents a large number of bonds, and the probability of any one series or bonds overweighting the thing is remote. I think the difference in the curve on page 10 and that on page 11 is due to a shift in the plotting.

Direct Examination by Mr. Morgan Resumed.

Still referring to the chart shown on page 10, I do not know whether I stated that the purpose of this chart was to establish the levels of public utility security yields when identical securities are maintained in a series throughout a perod of time. The purpose is to establish a more representative level of security yields than is obtained from the charts which reflect the changing yield of a selected series, such as the Moody series, and to determine the relative position of gas company securities by the use of a manufactured gas index, because so few gas company bonds ever find their way into the series that are commonly used. Thus the Moody's series of 40 public utility bonds has only a few manufactured gas company bonds in it; and even that series of 40 is largely influenced by electric companies, composite gas and electric companies and telephone companies. So the third purpose of this approach is to see

how manufactured gas companies place in a range of this sort. Then, in the fourth place, it is to get some picture of the levels for preferred stock yields as evidence of the price of capital for a grade and level of security different than bonds, one that is nearer to the greatest risk margin of the whole capital structure.

The chart on page 10 is that kind of a chart. Now I think I should like to add, for clarification purposes, that the average yield of Standard Statistics A-1 plus bonds that is used here is the average as Standard Statistics published it—that is not a weighted average and ought to be worded that way; and I think we were a little bit derelict in not clarifying it, but I thought people rather knew what the Standard Statistics Index was. The Standard Statistics Index of A-1 plus bonds on chart 10 is an index based on December 20th prices, which unfortunately I did not see fit to record in a table, but which I would be glad to furnish if there is any interest in the December 20th prices as such.

The chart on page 10 shows markedly different levels of security yields for these larger and more diversified groups. The difference, for example, between the Standard Statistics Index of bond yields on A-1 plus bonds is marked throughout the period ranging from approximately 1½ to 3 percent in amount. It is particularly to be noted that the difference between the Standard Statistics Index of yields on A-1 plus bonds is generally becoming greater. There is a fairly reasonable and close approximation in 1930, with wider differences in 1932, 1933, and 1934, some recovering and narrowing of the difference in 1935 and 1936, but an increasing disparity apparent again in 1937 and 1938. Now, with respect to the 18 manufactured gas company bonds, they hold a relatively favorable position in the public utility index down to 1934, after which they seem to fall into a certain amount of disfavor, crossing both the curves for the 55 gas-electric company bonds and the average yield on 24 public utility stocks. The peculiar behavior of that series I analyze in more detail in connection with the chart on page 11.

1180 The figures on page 12 support both the charts on pages 10 and 11 respectively. The supporting figures are all there except those underlying the Standard Statistics monthly data, which I have already explained. These appear on page 18.

The yields on the 24 public utility preferred stocks rose from a level of about 5.43 percent in 1930 to 8.39 percent

in 1933, declined to a low yield of 5.08 in 1936, and rose to yield 6.24 at the end of 1937, and 5.65 at the end of 1938, reflecting a considerable disparity between the yield level of this risk security as compared with the bond yield levels.

I think I indicated earlier in the discussion that included in the series of 24 public utility preferred stocks there are two overwhelmingly large issues of high grade preferred selling at very low yields. In order to note the effect of the exclusion of these two dominant preferred stocks in a weighted average, the same calculations were made for the remaining 22 preferred stocks, and charted as a light dash line. The remaining 22 preferred stocks were available at an average yield of 5.84 at the end of 1930, rose to yield 10.98 for 1933, declined to a low of 5.59 in 1936, but rose again to yield 6.8 at the end of 1938. Viewing the resulting picture as a whole, it is clearly indicated that from this more representative picture of 97 public utility securities over the perod 1930 to 1939 the yield has been distinctly on the upper side of 6 percent.

I am addressing myself to the chart on page 11. Statistically it is always a question whether a simple average or a weighted average should be employed. Actually no categorical answer can be given. It depends on the character of the data and to some extent on what is desired to be shown. Thus, for example, in connection with new financing, the volume of new financing can be reflected as an average yield per issue or an average yield per dollar of capital raised. Now, if attention is to be directed to the dollar of capital that was raised, the appropriate thing is to weight the issue by its size and get a figure that is the average yield per dollar of capital; whereas, if you are interested in the representative level of security issues as such, the simple average would be the appropriate one to employ. In general, the important thing is to understand what is being obtained. Actually, there is probably never such a thing as a weighted average. A weighted average immediately becomes an average of something else, that is, it is an average per dollar instead of an average per issue, that is all.

Thus, the transposition from simple to weighted average, or the reverse, should be carefully made. In order to avoid any question of the sort, as to which is more appropriately employed where there seems to be some argument on either side, I have represented some of the figures which support the chart on page 10 in the chart on page 11, on a simple

average basis. In this chart the same 55 gas and electric company bonds are employed to develop a simple yield index based upon prices in December of each year. These 55 gas and electric company bonds were available at a simple yield of 5.18 at the end of 1930. The yield on this identical list of bonds rose to 7.60 at the end of 1933, declined to a yield of 4.19 in 1936, and returned to yield 4.48 in the end of 1938. So that that series, I believe speaking from memory, runs a bit lower than the weighted series, indicating that the effect of sheer volume was in the direction of those which yielded a slightly higher yield.

1181 The index for manufactured gas company bonds is broken into two series here in order to more clearly display the true facts with respect to these securities, one including the same 18 bonds used in the chart on page 10, and one using only 14 bonds. It was discovered that during the last two years of the series two of the continuously employed bonds were starting to act up very unsatisfactorily, declining in price which resulted in abnormally high yields; so in order to eliminate the effect of the two that were distinctly non-representative from the rest of the series, those two were eliminated. In order not to cause too great a distortion on account of that, the two lowest bonds for simple average purposes were also eliminated. In other words, the series of 14 is a selection of 14 from the middle of the 18, to avoid the effect of the extremes and get a more representative behavior.

I can not determine from that page which were the two highest and which were the two lowest. My memory is that the two highest ones eliminated were the bonds of the Laclede Gas Light Company. I do not recall which the two low ones were, but the two highest and two lowest were eliminated. Relative volume has no influence here. It is a simple average.

It can be noticed here, as the result of that purification in effect, as to that statistical series, that both series plotted in the dash lines follow very closely together, display a fair degree of homogeneity, until the end of 1938 when a marked disparity between the two series develops; and it is the suggestion that the seeking for a more homogeneous sample is the justifiable statistical procedure. I believe that the index of the 14 bonds is consequently, over the whole period, more representative, but there is not any violent difference until we get into 1938.

Now, it will be noted again on the simple average basis both the 18 and the 14 manufactured gas bond series held below the average yield on the 55 gas and electric company bonds down to the end of 1934, at which time, as we noted in the weighted average yield analysis, they seem to have fallen into increasing disfavor and were available at distinctly higher yields than gas and electric company bonds.

The index of 24 gas and electric company preferred stocks on a simple average basis, now freed from the influence of the generally lower yields on the large issues of large companies holds at somewhat higher levels than the weighted average as reflected on the chart on page 10, holds a somewhat higher level than does the same curve on a weighted average basis. The yield on the series never falls far below 6 percent on a simple average basis reaches its high at substantially 12 percent at the end of 1933, declines to 9.93 percent at the end of 1934, and to 6.04 at the end of 1936, to rise again to yield an average of 8.10 at the end of 1937 and 7.10 at the end of 1938.

I think, from all of the trends indicated up to this point, it is rather clearly indicated that there have been, in the period since 1930, such marked fluctuations in the yields on securities that to have taken any one particular point there and said that that is representative would soon
1182 have proved you wrong in either direction and in both directions at one time or another. Consequently, I think, from an evaluation standpoint, some perspective in terms of where these levels do come from and how they have changed, is useful, and is something of a discipline to jumping at conclusions with respect to the level at which they happened to be at any particular moment.

The index of manufactured gas company bond yields has probably more in common with the natural gas position than any other group of bonds so far analyzed and traced. The degree of protection afforded bonds of a series of this character in terms of times interest coverage is, in my opinion, needed to throw light on the significance of these relative yields.

In my opinion yields studied independently of coverage and yield levels without reference to the protective income available for the securities in any bond included in such a series, are relatively meaningless for a definitive and final judgment. Thus any bond series, for example, may be showing a declining yield on account of the improved position of the constituent bonds; not that bond yields are

going down, but that the yield on a given series whose quality is improving may be a factor in causing it to decline.

The simple yield on these 18 manufactured gas company bonds as of March, 1939, was 5.51 percent. Now I have computed the coverage on that series of bonds just to give illustration to the point which I tried to make. The simple yield of 5.51 percent on 18 manufactured gas company bonds showed requirements earned of about 3.74 times. That means that these bonds, the prior obligations, had their requirements covered 3.74 times, on the average.

That was in March, 1939. I hasten to add also that the March, 1939 ratios are calculated by reference to 1938 income. I believe I heard a witness here earlier adopt the same technique, and I think it is an appropriate one to use.

In connection with bonds I do not think it is necessary to make the complicated adjustment, because bondholders look at the annual report of the past year more than stockholders, trying to anticipate the future. So I have done it on a simpler basis, simply using prices as of March, 1939 against 1938 reported income.

For the purpose of establishing some basis of appraising these average yields in terms of coverage it may be noted what the average coverage on the middle six items in Moody's average of Aa bonds was for the year 1938. Now the reason for taking the middle six is again the statistical reason for avoiding the influence of an occasionally unusual ratio which might be two or three times as high as some low one and completely distort the picture.

Taking the six middle items of Moody's Aa bonds for the year 1938, the coverage was 3.31. This is substantially less coverage than found for the manufactured gas bonds on either a weighted or a simple average basis.

1183 Whereas, the average yield of Moody's Aa bonds for March, 1939, the comparable date for the gas companies, was 2.99 percent; the yield for March, 1939 was 5.51 percent on the gas series. Thus, the coverage actually available there on the average is not so different, but the average yield for these securities is markedly different.

The times interest earned for the 18 bonds was 3.74. Thus, the yield on Moody's Aa bonds, which is the classification in terms of coverage which most nearly approximates the coverage on these gas bonds, at 2.99 is substantially below the simple yield of 5.51 percent of the 18 manufactured gas company bonds.

Now, coming down to the bottom of the chart, the Standard Statistics curve employed on this chart is a simple average of the four quarters that are reported in the table; and of course the four quarters are the average of the respective months involved in the quarter. Thus, the curve is not at every point entirely identical with the other curve on page 10 because of the difference in the base of calculation. The principal differences develop in the point for 1931 and 1932, and there is a slight difference in 1934.

So far as that line is concerned, the caption ought to be amplified, that the Standard Statistics' index is the simple average of the four quarters for the year instead of the year-end figure. In other words, the average on page 10 is the average of December 20 yields and that on page 11 is the simple average monthly as reflected by quarters on page 18.

I would like to comment on the data shown on pages 13 to 17, inclusive. As of March, 1939, the weighted yield on the 18 manufactured gas company bonds was 6.14 percent, and the weighted times requirement earned, which is probably the legitimate and appropriate comparison to make if you are going to use a weighted yield, the weighted times requirement earned was 3.60. Thus, 6.14, the weighted yield as of March, 1939, and 3.60, the weighted coverage on the basis of 1938 income available, are in contrast to the yields which I previously quoted, the simple yield of 5.51 percent for the 18 gas company bonds as of March, 1939, and the simple times requirements earned of 3.74.

The 18 gas company bonds on page 12, for March, 1939, show a weighted yield of 6.14 and a weighted times requirement earned of 3.60. That is offered to contrast with and to complete the previous statement that the simple yield on these 18 manufactured gas company bonds as of March, 1939, was 5.51 and the simple times requirements earned 3.74.

Now, my being of the opinion that a period of this sort, with such rather markedly fluctuating yield levels, makes it dangerous to place too great a reliance upon any spot in the times series, I considered it worthwhile to establish the average or representative levels over this period of time for these various series. Thus, for the simple average yield—I am speaking from the table on page
1184 12—for the simple average yield of 24 preferred stocks, carrying it through from 1930 to 1938, accord-

ing to my figures the average is 7.98. Taking the 22 preferred stocks on a simple average yield basis—this is after eliminating the large low yielding issues—the average is 8.20. The 55 gas and electric company bonds on a simple average basis over this hectic period 1930 to 1938 average out at 5.46, whereas the simple average of the 18 manufactured gas company bonds gives me a figure of 5.72 over the period.

Now, in the light of what I believe with respect to the unfortunate influence of two of those bonds in the series of 18, I think we ought to add the average on the 14, which I do not believe is tabulated anywhere. The yield at the year end for the 14 manufactured gas company bonds for 1930 was 5 percent; for 1931, it was 5.98; for 1932, it was 5.79; for 1933, it was 6.86; for 1934, it was 5.48; for 1935, it was 4.66; for 1936, it was 4.24; for 1937, it was 5.68; and for 1938, it was 5.42, which averages for the period, to get a comparable figure for the more homogeneous 14 gas company bonds, 5.45 percent.

Pages 13 to 17, I believe, represent the listing of the issues included in the indexes that were discussed in the preceding charts. Found on page 13 are the issues included in the index of 18 manufactured gas company bonds. They record the bonds that were used in these series. These bond yields were always to maturity and preferred stock yields were straight yields.

The chart on page 19 and the two following charts are directed towards getting a closer view of the natural gas company position. I think possibly it will make it clearer as to what was done in each of them if I speak in respect to that whole effort. First, before addressing myself to that chart in particular, the first step in the development of the data on which this and the following two charts are based was to identify all the natural gas companies included in Moody's Public Utility Manual. After these had been identified the companies which had bonds outstanding were identified, that is, convertible debentures and any other security not a bond were excluded from the consideration of this particular study. All the companies having bonds outstanding then were checked in the Bank Quotation Record of the Commercial Financial Chronicle for prices on any Exchange, or in the public utility bond section. High and low prices were obtained whenever possible for each month. The problem, I may say parenthetically, with respect to a natural gas study is,

found, the same as expressed by some preceding witness; namely, the poverty of material to work with to get a really adequate and representative sample. That is the reason for starting out to take everything that is in Moody's and eliminate only what you had to give up, the effort all the time being to try to keep as large a mass of data as would conform to the necessary standards.

If only bid prices could be found the bid price was used instead of a sale. It, of course, is common knowledge that the bid would be lower than the asking price and is construed to be on the conservative side. It was in many instances, in a number of instances at least, the best that could be found.

The high and low prices for the month were found, were averaged, and the yield to maturity determined from 1185 standard bond yield tables. The yields for the three months in each quarter were then averaged to develop a quarterly yield. In cases where, for infrequent intervals, prices were available for only two out of the three months in the quarter, in order not to eliminate such bonds from an unfortunately narrow base anyhow, they were employed. Thus, upon occasion the average for a quarter is based upon two rather than upon three prices, in order to maintain the scope and breadth of the sample. In a very few cases where only one price could be obtained for a quarter, the yield on this bond was used in order to secure continuity of the series. However, there were very few cases where this was necessary, it it did not, in my opinion, affect the composite mass result at all. Bonds were excluded, of course, where no prices could be found.

Secondly, where the security became short term, it was eliminated. That is another difficulty with respect to natural gas security studies. Natural gas bonds are not usually issued for very long terms to begin with and then they soon hit the margins of a short term security and disqualify themselves because of the difference in the values of a short term security under these money market conditions. A default in interest payment of course exceluded the bond before the default occurred. When and as soon as the security was called, the security was eliminated from the series.

By "short term" bonds, I mean maturities within five years. I think that is the standard accepted term, five years.

I think I can proceed with the rest of the explanation of the method used by reference now to the chart on page 19. The purpose of the graphical representation in the chart on page 19 and the chart on page 22, as well as on page 28, is to determine to what extent the experience with natural gas securities was comparable to the experience of the classes of enterprise previously analyzed. The purpose is to determine the range and representativeness and historical change of the yields on natural gas interest-bearing applications.

The vertical scale on chart 19 is the per cent yield to maturity, and the horizontal scale the years by quarters, and it will be seen that the quarterly yield was built up by averaging the monthly data.

Five curves are plotted on the field of the chart on page 19. The dash line identified as No. 5 records the changing weighted average yield of the total par value of natural gas company securities for which prices could be found and which conform to the conditions previously stated.

For fear of being misunderstood, I want to make one other limitation that I have made earlier, and that is there have always been excluded in these studies from natural gas averages any public utility company that was merely found to be distributing natural gas.

1186 The other four curves on page 19 are respectively, (1) the average weighted yield for the lowest one-quarter of the total par value. Now, this is a device which is a bit different and seemed to be made necessary by the range and variety of the security yields that one runs into in this kind of an analysis. So what was done was to take the total par values on which prices could be found in each quarter and array it from the lowest yield to the highest, then to measure from the lowest yield security up to a point representing one-fourth of the total volume thus reflected. Thus at each point throughout this series we are selecting the best one-quarter as evidenced by yield, which is a rather stringent and strong-armed way of separating a mass of this sort into representative quarters, in my opinion, however, the results are more representative than any mechanical division by characteristics other than the yield itself.

So the four curves, other than No. 5, on the chart on page 19, record respectively, (1) the average weighted yield for the lowest one-quarter of the total par value for

which prices were obtainable in each quarter year, and (2) the average yield on the second lowest one-quarter of the total par value for which prices could be obtained for each quarter year. Similarly, curve 3 reflects the weighted average yield for the third quarter volume, and No. 4 the fourth quarter of the volume selling to yield the highest return.

In the middle of 1939 the lowest quarter was selling to yield an average of something under 4 percent, whereas the highest quarter was selling to yield in excess of 12 percent. The very range of the yields in data of this sort is what I consider makes necessary this kind of a breakdown, to show how representative an average curve, or how unrepresentative, for that part, an average curve might turn out to be.

The average in the second quarter of 1939 is 6.34 percent, but the range of yields which make up that average runs all the way from 3.58 percent to 12.29 percent.

I think it also would be helpful if I made this perfectly clear, that as a result of this method the same bond is not necessarily found in the same quarter continuously. Here we just admit to a membership in the quadruple class, the natural gas bonds if they merit it by being in one of the quarters at each time.

Obviously, you might hit $5,000,000, for example, and the quarter dividing the part would hit in the middle of it, in which case half of the $5,000,000 issue came in the lowest quarter and the other half went into the next quarter, since it is a division into quarters by the volume and not by the yield instance.

This chart shows that the spread in the average yield among the four quarters of the total volume was relatively small during the years 1928 and 1929. They hung fairly close together in those pre-depression years, surprisingly close for the performance over the rest of the period, but beginning in 1931 the possibilities for speculative fluctuation reflecting the greater degree of risk and uncertainty developing in general and in particular with respect to 1187 this class of investments becomes to be quite evident.

The statistical method employed here would naturally tend to stabilize index No. 1 very much, because it would always be privileged to have the cream of the total array included in it. Thus, we do not get the fluctuations reflected as much in the lowest quarter as in the second

quarter, and of course very significantly in the third and fourth quarters.

The average yields for the second, third and fourth quarter volumes reached extremely high levels during the years 1931 to 1934, inclusive. The year 1936 reflected a substantial improvement in the position of these securities. The range in that year being only from four to 10 percent, if one may say "only" with respect to such a range. The relapse in the bond market of 1937, however, threw the curves widely apart again, from which they had recovered somewhat by the middle of 1939.

The yield levels reached by all but the best quarter of the total volume are not comparable with the experience of public utility securities, as far as the level is concerned. In the second quarter of 1939 the lowest quarter of the total par value by yield had an average yield of 3.58 percent, the second quarter of the total volume 3.89 percent, the third quarter 5.59 per cent, and the fourth quarter 12.29 percent, The average for the entire par value for which prices could be found in the second quarter of 1939 was 6.34 percent.

In the light of the hectic behavior of the securities of this class, it is not inappropriate to attempt to envision representative levels over a period of time. Over the entire period the lowest one-quarter of the total volume sold to yield 4.66 percent, the second quarter 6.14 percent, the third 9.29 percent, and the last quarter 14.73 percent. To reduce this to even more concentrated form it may be noted that the overall weighted average yield for the entire volume for the 11½ years was 8.71 percent.

Page 20 and page 21 record in table form the statistics on which the chart on page 19 is based.

1188 The chart on page 22 reflects a dispersion of each one of the yields applied in the preceding analysis. It is an effort at checking the representatives of the spread in the character of data employed. Averages of highly non-homogeneous statistical values are always possibly misrepresentative. In the chart on page 22 each yield used in the preceding analysis to establish four quarter volume indexes is plotted so that the actual range and concentration of yields at which natural gas company bonds sold during the period from 1928 to the middle of 1939.

The vertical scale measures the yields in per cent to maturity and the horizontal scale the years by quarters. Four designations are employed in this chart which should be

distinguished. Each yield is indicated by a solid, filled circle, a black dot; the median point is indicated by a diamond; the first quartile point by an inverted pyramid; and the third quartile point by a pyramid.

Non-technically, the median would be the mid point in the array, and the first quartile would be a point one-quarter up in the array. It should be understood that a quartile is a point and not a quarter of a volume, as we used it before. It may be conceived as a quarter median. Median and quartile points afford an opportunity to trace representative levels that one may choose to interest himself in, and to trace the representative levels of yields as affording a contrast to the preceding weighted average yields which would always be influenced by the preponderance and size of certain issues.

The statistical tabulations on pages 23, 24, 25, 26 and 27 offer the supporting statistics on which the chart on page 22 is based.

This chart shows that for the years 1928 and, to some extent, 1929, a relatively compact distribution of yield between 5 and 9 per cent developed. The median for the years 1928 to 1929 ranged from 5.66 per cent to 6.80 per cent. The first quartile point ranged from 5.06 per cent to 5.61 per cent, but since 1929 the dispersion of natural gas company bond yields is obviously wide and irregular. While there was some reconcentration to be noted in 1936, 1937-1938-1939 again disclosed a wide dispersion. Thus in the period 1937-1938-1939 the median ranged from 6.46 per cent to 9.38 per cent, and the first quartile ranged from 4.40 per cent to 4.93 per cent. Again trying to condense a completely representative disclosure of this sort to a more comprehensible figure and to use some of these other measures here indicated, namely, the quartile and median points, I find that the average of the median points for the 46 quarters, that is, the whole period of the array, is 8.68 per cent. The average of the first quartile point was 5.14 per cent and the median 8.68 per cent. I did not assume to average down the list on the third quartile point. It obviously is a very much higher level.

1189 *Question by the Examiner.*

This is an entirely different approach from that reflected by the chart on page 19. On page 22 you have the actual yield by issues. In other words, the chart on page 22 is, in effect, an unweighted and simple representation.

Cross-Examination Interposed by Mr. Myse.

There is no attempt at averaging in the approach reflected by page 22. Every yield found is given its exact position. There is no boiling down. You have all the realism possible on this page, but the average on page 19 is a weighted averege. It gives effect to the size of the issues; and the quarter volumes obviously, in their location, are influenced by the size of these issues; but on page 22, in order to get around any influence of weight or volume, the actual yields in each particular instance are plotted to median and quartile points, merely indicated in order to allow for some following of the changing quartile points. Thus it is a median point to yields and not a mid point of volume. As explained before, this term "quartile" is a halfway point between the median and the top and bottom respectively.

Cross-Examination Interposed by Mr. Slaff.

You cannot always visualize the quartile point because it is sometimes over a dot, you understand. The statistical distinction between a quartile and a quarter of the range is that a quarter of the range has a volume in it. It is the amount from 0 to 3, say, whereas the quartile point might be 3.

Direct Examination by Mr. Morgan Resumed.

In the middle quarter of 1939, the last line on there seems to be 24 or 25 issues. The first 6 are separated from the second 6 by the quartile point. It is a technical statistical term used to mean just that, though I appreciate there is a good deal of confusion among people who do not use those terms.

In order to subject this material to one further test, all of the volume was arrayed by yield class intervals. Thus all the volume that yielded, at any time during the period, from 3 to 3.99 per cent was summarized. All the volume which at any time throughout the period yielded from 4 to 4.99 per cent was similarly summarized, and it was done that way down through the entire scale. This brings this rather widely varying data down to a somewhat more comprehensible basis, and also introduces the principle of evaluating it over the period of time.

Perhaps I can make it clearer if I point out that a given million dollars of bonds may have been sold at any one year to yield between 3 and 3.99, in another year between 7 and 7.99, and at another time between 11 and 11.99. If such a thing were possible it would find itself reflected in each bar in this chart at each interval. In other words, it is a composite of all the yields classified by the yield interval
1190 indicated in the scale, the horizontal scale on the chart.

The chart at the bottom of page 28 is the same material reduced to a percentage basis so we can see quickly the relative significance of the volume which sold at different yields. To summarize it in one sentence, it appears from that lower chart that approximately 23 per cent of the entire volume yielded from 5 to 5.99, and correspondingly the percentage of the total volume that yielded the different percentages set across the bottom of the page there is indicated. Approximately 45 per cent of the total volume over the period is shown to yield 5.99 or less, while 55 per cent of the total volume over the period is shown to yield in excess of 6 per cent.

It is clear that the mode is in the interval from 5 to 5.99 in the top chart and that the volume falling on either side of the mode is rather comparable, thus supporting the statistical position of the mode. I have made some observations with respect to the relationship of times requirements earned and yields with respect to these figures. Thus yields were obtained for the second quarter of 1939 for a par value of $151,779,000. The simple yield on this total par value was 8.69 per cent, for the second quarter of 1939, 8.69 per cent. The interest requirement on this total volume were earned an average of 2.22 times, that is, on the total volume on which the average yield was 8.69 the interest requirements were earned 2.22 times, that is, on this simple average basis. Now on a weighted average basis the yield on this total par value was 6.34 per cent, indicating the influence of the larger size issues for the second quarter of 1939, while the interest requirements on these securities on a weighted basis were earned approximately three times, again showing the influence of the weight of the large issues and the probably better average protection that they had. This is the second quarter of 1939.

Now I also offer figures which I do not believe I offered earlier in connection with the quarters for the total vol-

ume. Take the lowest quarter of the total par value—not the quartile point—the lowest quarter volume, which was in the second quarter of 1939, had a weighted yield of 3.58 and a weighted times requirements earned of 4.30. The second quarter volume had a weighted yield of 3.89 and a weighted times requirements earned of 3.66. The third quarter volume had a weighted yield of 5.59 and a weighted times requirements earned of 2.7, while the highest quarter volume yielded 12.29 and had a weighted coverage of 1.24. The weighted average of the total par value then had a weighted yield of 6.34 and a weighted coverage of 2.97. The simple yield for the second quarter of 1939 was 8.69 per cent and the simple times requirements earned of the whole 2.22 per cent. The supporting data for the charts shown on pages 19, 22 and 28 are shown on page 29 and 23 to 27, inclusive.

The charts on page 30 record the yields on public utility bonds of different risk characteristics as shown by Standard Statistics Indices of Public Utility Bonds. The reason for adding this series to the exhibit is that Standard Statistics divides the range into six groups as distinguished from the four groups of Moody's; consequently giving us a little more range. The average yields are recorded 1191 in the upper chart for the years 1924 through the middle of 1939 for the six classes ranging from the highest grade A1+ down to the B classification.

This affords a check on the absolute differential analysis and the relative differential analysis which was presented based on Moody's statistics. Without taking any more time than necessary I think it would be sufficient to say that the absolute differences, as recorded in the second chart, confirm the result previously obtained. This further refinement, however, is to be noted in that here the differentials are as between and among classes, that is, each class is referred to a base which was something that was not done, you recall, with respect to the Moody's series where it was only the lowest class to the highest class. It confirms our expectation that if that basis were carried out in that page it would show the general trend of a widening absolute differential as you go into classes of securities having high risk characteristics.

Similarly, if you attend the chart at the bottom of page 30 it will be noted that the relative significance calculated on this same basis evidences a behavior very similar to

that previously found, with a higher relative level of risk reward significance and with no approach in recent years to the low levels prevailing prior to the depression. The tables on pages 31 and 32 support the chart on page 30. I did not have planographed all the statistics on the absolute differentials and relative differentials which are found in the other charts.

The chart on page 33 records the volume of utility and non-utility domestic corporate long-term debt financing, classified as new and refunding by years. It will be noted that the public utility financing is indicated by the black and white segmented bar, whereas other domestic financing is indicated by the cross-hatched and diagonal designation.

From this particular chart will be noted the very low level of any financing in the years 1931 to 1935 and the continued low level of public utility new financing during the period 1935 to date. The relative volume is indicated by the small black portions of the bars, and the point of contrast to which attention is called is the very low volume of new capital attracted compared with what was the fact in the period 1922 to 1931, when new public utility financing represented a very large part of all investment banking activities and when new capital was, as will be noted by the relatively small amount of white bar remaining, the preponderant portion of the financing.

The white portion of the bar reflects, of course, refunding, rebargaining for capital which has already established itself in its earnings power, whereas the new financing is the effort to get more capital into the industry. The table on page 34 supports the chart on page 33. The source of all these tabulations is the monthly report of the Commercial and Financial Chronicle of Corporate Financing.

1192 On page 35 the same basic chart is offered, with the superimposition of a curve showing the yield at offering price on new electric and gas utility bonds, that is, not new financing but new bonds issued, gas and electric utility bond issues. This yield at offering price suggests itself in the first instance as something of an index of the level at which capital bargains are being made by gas and electric utilities. It has, however, in my opinion, certain defects and is subject to misuse or misinterpretation, and I wish to address myself to some of those limitations. In the first place, a weighted average

of the yields at offering prices of public utility bonds is influenced by all of the factors which go into that calculation, that is, the volume, the weight, the mere size and magnitude of the issues and the yield at which it enters. Consequently any such curve would not tell the whole story accurately if its qualitative content were changing over a period of time. It might be declining simply because a larger proportion of the kind of bonds which yielded less were included. In order to test that possible deficiency in a curve of that character the material reflected in the chart on page 37 is offered. Before leaving chart 35, however, I will state that the table on page 36 supports the chart on page 35.

In an effort to determine the qualitative character of these new bond issues in order to be able to appraise what kind of capital bargains were successfully made in recent years and at different periods, the financing of gas and electric utilities reported has been classified according to Moody's ratings. What is used is the first rating following the offering.

Now from the chart on page 37 it is seen that the Aaa bonds represented a relatively small and unimportant portion of the total volume before 1930; that even when you include the Aa bonds with the Aaa bonds they are still overwhelmed by the volume of issues of lower rating and classification; that after the year 1930 the Aaa bonds become a fairly important factor in the total volume of financing and when added to the next best class the Aa bonds clearly dominate the total volume of financing. Thus the Baa bonds, which were apparently quite salable in the period 1923 to 1928 and 1929, dropped into an insignificant position after 1930 and the Ba's and lowers practically disappeared from the scene of financing.

In the independent bar to the right of the chart on page 37 the average over the entire period is reflected. It should be understood, of course, that the average shown there for the Aaa bonds is tremendously influenced by the large significance attached to Aaa bonds in the later years, bringing up the very low level of the previous period very substantially. That affords a measuring stick or test of the relative significance. On page 38 the same chart is introduced with a different bar on the right. There is some interest in the question as to what is the distribution of utility bonds, in connection with what kind or class of

bond would be representative of public utility bonds outstanding. Consequently all the public utility operating company bond issues were classified by rating. The whole volume in Moody's was classified by rating, all those 1193 that have been issued during these years and any that were hangovers during the previous years, in other words, what I would call the characteristics of outstanding public utility debt. We find that of the volume of all public utility debt outstanding, that which is represented by Aaa is slightly in excess of 10 per cent of the total. When reference is made to the yield on Aaa bonds, for example, you are talking about a class and variety which represents about 10 per cent of the total capital outstanding. Similarly, it can be quickly ascertained from the independent bar on this chart as to the relative significance of other risk classifications. The charts on pages 33, 35, 37 and 38 are supported by the tables on pages 39 to 49, inclusive. I would say there is just a slight difference between the volume of public utility gas and electric financing that is not rated and the total volume. It is not large, but there are occasional issues that are not rated. The chart on page 50 represents another effort to check the representativeness of the average yield on newly issued public utility operating company bonds.

The first distinction to be drawn is that between a weighted average and a simple average. We note that the issues of larger companies generally command lower yields; and so we contrast here the weighted yield which is represented by the solid line and the simple average yield which is represented by the dotted line. The middle curve, the sold black line in the middle of the chart, is the total yield on all ratings weighted. This is the same curve as appeared in the previous chart.

To break that down into its components a division was made between the average yield at offering price of securities which Moody's rated as Aaa and Aa, and those which Moody's rated A and lower, and the spread between the two groups of curves indicates the difference in the representative levels of those two classifications. One other thing, however, is to be noted upon more careful examination and that is in the early part of this period the overall average employed carried rather close to Moody's ratings for A class bonds and lower, whereas in the later period the average of all financing came down

and was more representative of Aaa and Aa financing, which is the conclusion we suspected from our previous chart analysis. Consequently to a measurable extent the declining average yield of the new financing was influenced by the changing quality of the securities which were involved in the total.

In other words, the financing was confined to desirable issues predominantly. In fact, financing in recent times has been almost wholly restricted to securities which could qualify as the highest grade securities. Thus in the early period the number of issues of A and lower rating was very predominant, that is, 146 to 14 in 1923, for example; whereas, when we get down to the later period not only do the number of issues decline but there is an almost even distribution now between them rather than the overwhelming number which we had in the lower grade issues. The table on page 51 is the stastical data supporting the chart on page 50. In all these charts only the yield to the investor at the price at which the invesment banker, if such served, offered the securities to the investor is reflected.

Now it is quite appropriately observed, and must be before any conclusions are derived from any of these indicated levels, that the cost of capital to an enterprise is distinctly higher than the yield to the investor. The highest grade securities in more recent years have had to allow approximately one-fifth of one per cent, if my recollection is correct, for the cost of financing as such. Consequently, the cost of capital to a company on the higher grades of financing would have to be increased by approximately one-fifth of one per cent on the average, and of course there is a considerable range in that.

When it comes to lower grade financing, securities that really have to be sold instead of being taken off the hands of bankers, securities not in the Aaa and Aa classifications, the cost of financing rises rather significantly and, in my opinion, would probably, on the average, run at least .4 to .5 of one per cent. When you get into securities of the class of preferred stocks, the cost of financing is even higher than that, so I do not mean to imply that these yields to the investors represented the full cost of capital to an enterprise. To these yields we always have to add the cost of financing to arrive at the cost of capital.

The charts on pages 52, 53, 55, 56, 59, 60, 62, 63, 65, 66, 68

and 69 I would like to treat as a group since they represent the same method of approach, differing only as to the period of time.

I stated in the course of the testimony that the yield as such on a security is little evidence of and by itself as to the capacity of the enterprise issuing that security to command capital, that finally and ultimately it is a question of at what price it can command the capital under given terms of the contract. Thus it is conceivable that the most risky and hazardous of businesses could command a certain amount of debt capital, a very small amount of debt capital, at rates which would compare very favorably with the rates on the highest grade securities of very safe and secure enterprises.

One of the most important and most common measures of the degree of security prevailing with respect to any investment security is the times that its interest requirements and the interest requirements of prior issues are covered. Consequently, in order to establish any kind of comparability, to get any kind of a valid measure of the credit position of an industry, it is necessary to go into a two-dimensional analysis and relate the yield and the times interest coverage of the security.

This method is employed in the charts on page 52 and following ones that were enumerated. On these charts the vertical line represents the yield to maturity at market price of the respective securities. The base line reflects the times interest requirements earned, or, reciprocally, the per cent of available income required for equal and prior issues. In order that it cause you no difficulty in reading it, it is always easy to reestablish equilibrium by noting that two times requirements earned is the equivalent of 50 per cent of available income required for equal and prior issues.

This series of charts is, in substance, identical with the series of charts developed by the Federal Communications Commission study of the rate of return in connection with the determination of a rate of return for the Long Lines Department of the American Telephone and Telegraph Company, with this addition: In order to test the relative position of the natural gas industry independent determinations along the same lines and following the same principles were employed with respect to representative natural gas securities. They were then plotted on these same charts, or charts redrawn from the same

data, in order to see whether or not natural gas securities conform to the characteristics of public utility securities.

Now in studying these charts the point is not to see whether they reach the same low level or not, but to determine whether, with the same amount of coverage and protection, they reach the same low level. Thus the method for reading these charts is to see whether or not a given class of securities falls above and to the right of issues of other classes. Thus, taking the chart on page 52, for example, which reflects prices for March, 1928, against the income for the year 1927, we find that the natural gas securities which could meet the qualifications and basis of selection employed for the Federal Communications Commission study are plotted, and it is seen that they substantially fall in an area on the chart both above and to the right of the mass of the gas and electric and telephone securities employed on that original chart.

There is added also to the chart on page 52 a line which you will find absent on page 53, a line which records the average yield of the middle six items of each of Moody's four grades of public utility bonds.

The open circle with the (1) in it represents the average yield and coverage of the middle six Aaa bonds; the open circle with the (2) in it the Aa bonds; the open circle with the (3) in it the A bonds; and the fourth one the Baa bonds. It is informative to note how these four grades of Moody's bonds, varying with respect to risk characteristics and coverage, distribute themselves through this field. The line connecting those four representative yields and coverage relationships is markedly below the level occupied by most of the natural gas bonds in this picture. The numbers refer to the supporting table, enabling you to exactly identify each particular plotted bond on any of these charts. Any number that runs up into 600 you will find at the end of the bond section here in a table listing all of the natural gas bonds. This number 649 is on page 71, I believe. It gives you the natural gas company bonds and this company is placed there for reference. The whole thing is coded for ready reference, both for the securities selected for the Federal Communications Commission study and the natural gas securities which were added to the picture.

There is one bond shown here at the 5% level in 1927 and 1928. That is number 649 and is a security of Southern California Gas Company, regarded as a very fine security

in the market. It is so classified on account of the general position of the company, its other assets, and all the factors which enter into the classification of the security.

1196 Now the same method of reading these charts is employed with respect to each one. It will be noted that I did not attempt to impose the natural gas relationships on every year that the Federal Communications Commission employed. It did not seem necessary to make the point for each year. I moved from 1927 and 1928, which is a pre-depression relationship, to 1931 and 1932, which is pretty well into the depression relationship. In each instance the natural gas securities fall to the right and above as a group. I do not mean to imply that there are not individual exceptions.

I would not attach any particular importance to the specific location of any particular security in that array. The point to be made is the general placement of the classes of securities.

I would like to refer to the statement of principles and standards of selection for these bonds as reported by the Federal Communications Commission in its study. I have accepted their method of procedure as good and reliable and have employed it here. We have attempted to apply the same standards to the selection of the natural gas bonds.

I point out that on the top of pages 55 and 56 some decanterlike figures appear. It seemed desirable to maintain a field for the plotting of those so that the eye would envision similarity of relationship and placement identically from one chart to another, but in certain years here these natural gas bonds got completely out of hand, at least some of them did, and went off the chart, so instead of destroying the opportunity for a ready visual comparison and keeping the same size field we simply indicated they were 9 per cent and above and let it go at that.

Now the chart on pages 68 and 69 without the Moody index on it is not a chart from the Federal Communications Commission study. That study, as you know, was made before that time. In order to make available the data for more recent periods for this purpose the same technique and procedure was employed to project the Federal Communications study and bring it further up to date. I had access to the Statement of Principles and the methods of selection as a guide to making that as comparable with previous tabulations as it could be made. I still find the nat-

ural gas bonds above and to the right. Some of the natural gas bond yields have come down to much lower levels than previously existed; but it is always to be noted that for the same coverage, for the same income protection, natural gas bonds are found to lie higher in the field.

The tabulations following each one of the charts from 52 through 69 are shown for the purpose of supporting the charts.

Cross-Examination Interposed by Mr. Slaff.

In getting the middle six Moody's for each Aaa and Aa it was necessary for the Aaa group to avoid extreme instances because in Moody's 10 bonds they had bonds in there that had 17 times coverage, for example, a few freaks like that; and so the middle six proved to be a more homogeneous, comparable group. But since it was neces-
1197 sary to do that, to get rid of the freaks in the Aaa classification, it seemed desirable to do the same thing for the other classifications even though the freak coverages do not appear in the lower classifications. That was an effort to get closer approximation to homogeneity and representativeness.

Direct Examination by Mr. Morgan Resumed.

On pages 72, 74, 76, 78 and 80 the same technique has been employed with respect to preferred stocks. Again the chart for the last year is designed with the highest regard for the principles and technique employed by the Federal Communications Commission in its study; and in these charts, as in the bond analyses, we find that for yields which are identical the coverage on natural gas preferred stocks is higher. Thus cartographically they are found to the right and above the levels characteristic for gas, electric and telephone securities. The tables accompanying these charts in each case offer the names and the identification numbers.

On page 83 a chart is offered which brings together in one place the relationships of yield and coverage for the Moody's bond classifications previously employed. The curves are for each indicated year; and there is developed also a composite curve, representing the 12-year average for the Moody's series showing the relationship of yields to coverage. I refer there to the heavier black line falling

in the middle of the field. For a period such as the last 12 years a composite result can be relied upon to eliminate the accidents of the particular year, and what accidents of inclusion or exclusion may have existed.

Thus the shape of that curve and the characteristic relationships there is probably a rather significant overall representation of what is required in the way of protective earnings or protective income at given yields for the class and type of bonds which Moody's used in their series.

The last chart, which unfortunately escaped numbering, which should be 85, imposes an additional curve on this chart for comparison purposes, using the prices for March, 1939, and the income for 1938 in each instance. We have the distribution of the gas and electric bonds as before. We find the natural gas securities plotted to the right and higher in the field. We have the curve reflecting the Moody's times requirements earned for the four risk classes; and in addition the yield and coverage by quarter volume of natural gas bonds that were developed earlier, plotted on here to see where they fall in relation to the public utility distribution which was developed.

I have used Exhibit No. 152 in arriving at my judgment as to what constituted the fair rate of return for defendants.

(At this point EXHIBIT NO. 152 was offered and received in evidence without objection.)

Having made the investigations included in the qualitative and quantitative analyses which I have reviewed here,

taking these analyses and the facts which I have de-
1198 duced and developed therefrom, and taking into account my knowledge of the natural gas business and the business characteristics and hazards of the particular gas companies involved in this hearing, and also my knowledge from experience and training in the field of economics and financing, my knowledge of the general business conditions of the country, and the earnings or yields which capital invested in business as a whole and in the natural gas business in particular is entitled to earn in order to command the required capital to conduct business and to compensate for the use of that capital, I have an opinion as to the proper rate of return for defendants.

My opinion is on the basis of the material of the qualitative and quantative character presented here, on the basis of past experience, on the basis of all my exposure to the effects of capital bargains that have been made for

industries in this country. I have approached the development of a rate of return for the natural gas industry from the standpoint of the public utility industry and by noting the differences and distinctions rather than moving down from the industrial classifications to the natural gas situation. I would like to put my answer in this way, if I might, that if there were an enterprise engaged in the natural gas business having a large, substantial investment in natural gas resources and in specialized transportation facilities, which company had the protected position and status of a public utility, I would consider 8% an adequate return; but I am of the opinion and conviction that Natural Gas Pipeline Company of America and Texoma Company do not qualify economically as a public utility, that the conditions and circumstances of their operation are not comparable to what is found in a public utility, and that those distinguishing economic conditions deserve recognition, in fact, must be recognized, in my opinion, if one is trying to judge what the necessary supply price of capital today would be for an enterprise of that character. Moreover, assuming that there is recognition to be given to the reward of enterprise in an undertaking of this sort, and that there is a desire to compensate and induce enterprise, I feel that 9 per cent is a more appropriate and fair return.

By "public utility" as I use the term here I mean an enterprise engaged in distributing a necessary commodity. I do not mean to attach any significance to whether an industry happens to be labeled a public utility as such or not.

Preliminary Cross-Examination by Mr. Booth.

If fairness is to be construed as including the reward for enterprise, then I say that a fair rate of return for these companies is 9 per cent. I do not say that the reward for enterprise accounts for the difference between 8 per cent and 9 per cent. I think I have put my answer to indicate that there were two considerations which entered into that difference: (1) the absence of the economic characteristics of a public utility undertaking and (2) the offering of some inducement and reward to enterprise. These two elements account for the distinction between the 8 per cent and 9 per cent to which I refer.

I did not attempt quantitatively to measure and express in my mind the difference between 8 and 9 per cent. I do not find that the mental processes of valuation are
1199 subject to that kind of quantitative fractioning. I think any effort to do so usually is under pressure

and reflects a degree of straining of the processes of judgment. I have not divided the figure representing the difference between 8 and 9 per cent into a specific allowance for the reward for management and the elements which distinguish it from a public utility enterprise. The process of coming to an opinion on the basis of a wide range of facts and material and exposure through a period of time is not subject to a calculating machine type of mental demonstration. I gave consideration to all these factors and came to an opinion. I did not build that up as bricks would build up a wall or assign specific mathematical quantities to each of these items.

Earlier in my testimony I stated that the rate of return must be divided between pure interest, risk premium, allowance for uncertainty, and finally the element of watchfulness, the care of the investment, stating in that connection that these were qualitative factors which should be recognized and considered, that they are generally significant and should be considered. I recognized those factors and gave careful consideration even to the question as to whether or not at this time there was any significant change in the evidence; and purported to show that such a thing as pure interest is not reflected ever in a quantitative expression in the market.

I did not engage in such calculating machine allocations as the assignment of a specific portion of the 8 or 9 per cent to pure interest. I cannot state how much of the 8 or 9 per cent I would allocate to pure interest. I think any effort at such a decimation of a composite figure is straining the processes of judgment. My most elaborate efforts have not disclosed any market indication of the price of pure interest as such; and I do not know any one else who has ever caught a market expression of pure interest as such. I think that it is definitely straining the processes by which one arrives at judgment to attempt specific allowance for pure interest and the other elements which comprise rate of return. I have always been of that opinion. I have sometimes given weight to estimates, approximations, in a retroactive fashion of analyzing back, but with full appreciation and knowledge that the process is a strained one.

I cannot state that in the course of my testimony I have referred to every important factor which I considered in arriving at my judgment as to what constitutes a proper rate of return for these companies because I understand

the processes by which the human mind works. There are many considerations which enter into it and leave their impressions in the course of a person's making up his mind. He is not necessarily, at a given moment, aware of all of them. I have not, if this is the answer to your question, offered or presumed to offer in my testimony many factors which undoubtedly have an influence on an individual's final opinion and judgment in a matter of this sort.

I began working on this study some time in April. I do not have in mind the number of days but I can assure you it has been on my mind more days that I have ever had recorded as definitely employed. It has been on my mind while I was traveling and while I was doing other things, as well as the formal time, which was substantial.
1200 I imagine direct and formal application probably runs into two months. I wrote up statements and opinions over the range of the subject matter which I thought were probably appropriate for the purpose in the course of my preparation. I prepared this exhibit and I developed, as I went along, opinions about different aspects of the thing as they developed. I am quite certain there must be important factors which entered my mind in arriving at my judgment as to the proper rate of return for these two companies to which I have not testified here because I could not possibly, in this time, cover all of the considerations which enter into that sort of thing. As to whether or not I have testified to all the important considerations, that word "important" is a relative term. I do not think I could put myself under such a restriction and extemporaneously say that there were no other important considerations which, in the course of coming to such a conclusion, entered into it. I am fairly confident that there were.

I just got through saying I certainly would not want to put myself in a position of having to recall extemporaneously all the things which were given consideration over a period of time like that. I am very confident that there were considerations which I have not mentioned in my testimony. I do not want to give a categorical answer which is not accurate. That is my only hesitancy. I was given a perfectly free hand to develop any material that, in my opinion, had a bearing on the question. I was given no instructions of any sort otherwise and to the best of my knowledge I went ahead and dealt with the evidences that

were obtainable and tried to work up the best of them and present them. There are certain things which I consider of importance which I have not testified to. For example, I testified this morning that I think a general observation of the earning power of capital as a whole is something worth taking into consideration. Now I did not do that and I did not directly in my own words testify to that particular thing. I had it in mind but time and energy would not permit special treatment. I, frankly, exhausted myself doing this, in addition to other duties, over that period of time. I just want you to understand that there are things that I would probably do in addition to what I have done if I had the time and opportunity.

I did refer to the earning power of capital over industry as a whole in a secondary manner in discussing a portion of the exhibit prepared by Mr. Gilman. It was opinion evidence on things prepared by another witness. Obviously it was my intention to refer to the matters of consequence, significance and importance, but where importance ends is an open question, and I was simply carrying it from one thing to another. I would like to make this additional statement, which I made privately to Mr. Slaff, or others, that in my appearing in a hearing of this sort from a university position I felt rather impelled to take something of a broad gauge point of view and to attempt to contribute something; and I would like to say in that connection to some extent I rather dodged doing too much of the traditional thing as part of my contribution today.

1201 I do not recall whether I made any direct reference to the changed circumstances of recent weeks, apparent changes in the policies of the Federal Reserve Board, as indicated by the withdrawal of support from government bonds, or to any direct evidence, which is probably significant, of a prolonged conflict. I did not take time to draw parallels between the experience that is evolving now and what developed in the course of the last great war. That may well come up as a fairly important thing. It is developing day by day. I am conscious of it. I am beginning to feel it may prove to be a very important factor. The day government bonds dropped I was very conscious of the significance of that as the possible beginning of the readjustment in money markets in this country. If that is the kind of thing, yes. That was a consideration hardly of the calibre which should be brought in, or hardly

unique enough to be woven in with a discussion of the kind I tried to offer, but possibly it would classify as an important consideration. I am perfectly aware and conscious of the fact that there is a threat and impact here which may be of important consequences for the security markets.

I think that probably my testimony did not indicate the degree of significance that properly attached to what experiences of investors in general have been throughout the period of changing economic conditions. It is one of those general things that every one is more or less conscious of and which more or less go without saying, but that does not diminish the significance or importance of this sort of thing in a consideration of this character.

I am not sure whether I called appropriate attention to the fact that the period of time over which the investor is willing to commit his capital to natural gas enterprises is apparently quite short. I found, as an incident to the development of my own studies, that bonds were usually relatively short term. For a considerable number of years 10-year bonds seemed to be the rather standard and traditional period, indicating the unwillingness of the investors to project themselves very far in that respect. Moreover, even in those relatively short term bonds they very commonly carried with them a stringent or strong amortization provision, so that in many instances what looks like a 10-year bond on the record is not in reality a 10-year bond, by virtue of the operation of the amortization requirements on the company's loan. The loan being for 10 years, the term averages only 5 years for the full amount, thus reducing the term by approximately one-half. The fact that investment banking found it difficult to sell securities of natural gas enterprises unless they were protected in that peculiar way I think probably has not been adequately emphasized. I am perfectly conscious of it as a fact.

It indicates the attitude of the investors toward the risk and uncertainty, and risk of the possible termination of the life of an enterprise of this sort.

I think that is one of the evidences of what I have called a major underlying factor, namely, the terminable life,—

1202 not only terminable but terminable over a relatively short period of time, and a high degree of unpredictability within that range as to what it is really going to be. What I referred to was merely to weigh the out-

ward evidences or weigh the market reflections of the investors' reactions towards that condition.

I made no geological determinations as to when the life of the reserves of these defendants would terminate. I think my testimony is perfectly clear on that. I stated that, from an economic point of view, all estimates as to physical life and all attempts at estimating economic life were subject to so many variations as to constitute, in the mind of the investor, a distinct hazard, because of the very uncertainty of any estimate of that sort.

I made no assumptions as to the length of time. I testified as to the amount of insecurity and uncertainty created by the various difficulties of making such estimates. I think this aspect of the terminable life of the enterprise or of an enterprise of this sort is a very fundamental consideration. I have seen the estimates that have been made as to the life of the property of these companies but I do not know as I recall whose estimates are whose. I think there were estimates running, if I recall correctly, 14 years, or something of that sort. These estimates were made presumably to show the life of the field which is being employed for this particular enterprise. I do not think I know the people who made those estimates. I have not said I was familiar with those estimates. I thought I recalled what the range of estimates had been. I have made no estimates as to the life of this project nor did I use any estimates in making my determinations as to the rate of return. I do not remember what the estimates made by other witnesses are. I have exposed myself to them. I read them in the testimony or in something else; but for the moment I would not be sure what my recollection on those is.

To an extent I am familiar with the company's capital structure. It consists of bonds and stocks. I have some recollection that the bonds ranged from $45,000,000 to $47,000,000 and that the amount of stock was nominal in relation to debt capitalization. I do not remember the number of shares. I do not recall if the shares were of a par value of approximately $3,000,000; I would have to look it up. The bonds, if I recall correctly, are 6 per cent coupon bonds, which I think I testified is of little significance under the circumstances. These bonds are held by the participating parties in the enterprise, I understand. Refinancing is a normal experience. Companies issue debt obligations of limited term of life and they naturally have to refinance. There has been that refinancing in recent

times. You ask if it is a common practice of public utility and some industrial corporations to refinance their outstanding indebtedness in the past two, three or four years. If you will leave out the word "common" I will answer "Yes", they have been refinancing for the purpose of getting lower money costs, lower interest rates and because of their maturities.

There has been a rather considerable amount of anticipation refinancing,—if you would use that term I would know what you are driving at,—anticipation refinancing on the part of the best utility companies, with respect to the highest grade and class of securities. I attempted to make clear in my testimony that the overwhelming proportion of the financing—and most of it was refinancing—was
1203 of the highest grade. That is the type of bond that you could refinance. Over a substantial number of recent years it was not possible to do any other refinancing.

I did not say that I was employed by a financial organization in about 1929 and 1930. I was an economic consultant during that period in New York; and I did a great deal of work for the old banking firm of August Belmont & Company in those years. This work was done on a semi-independent basis. I had an office up on the tenth floor of the same building. I had dealings with Rollins back in the days of the utility consolidations. That firm is entirely reorganized now; and it is an entirely different organization really, with nothing but the name left. I did a good deal of work for an organization known as James Rorrison which was a purveyor of utility preferred stocks. I did a good deal of work in reorganizations and plans for the firm known as Pomeroy & Salmon during the period of the banking distress. I covered a good deal of the South in that connection. That was a New York firm. I have had individual consulting contacts with various firms on utility matters. It is difficult to remember at this time of the day. I want to make it clear that I had offices of my own primarily during most of this period, either the Cedar Street office in the Life Insurance Building or the Continental Bank Building where I was for a year, I believe, during that two-year period. I had a multiplicity of industrial contacts which I will try to dig up for you which covered a range of a great many different types of industries and businesses. I think a substantial portion of them were in my own interest.

One of these contacts was in the industrial gas field. I had an assignment from one of the partners in Belmont & Company to determine whether or not it was a good idea to take a look at the natural gas business at that time. I think it was in 1930. The paucity of other activities and the difficulty of doing business suggested looking into possibilities, and I recommended an exploratory attitude. They did send out a number of men and retained engineering firms to make an exploratory determination. The net result of it was a decision not to have anything to do with it. I think the engineering firm we retained was Ralph Davis.

In answer to your question as to what seemed of most significance in arriving at my judgment as to what was the proper rate of return for defendants, without presuming to measure in a mathematical fashion and appreciating that I cannot do anything different in a thing like this than the buyer of an automobile can when you ask him "Was it the style or the horsepower that influenced you most, and how much?", I think I can safely say that the risk and the uncertainty elements in the situation stand out when compared with any other one. I think it is a fair statement to make that these two factors are more important than the element of pure interest and the other two factors to which I referred. I thought I testified clearly on what I think is the most important consideration in the factor of risk. I am glad to repeat it. I think my most summary statement on it was that the uncertain life and the behavior of natural resources imposes its uncertainty and risk on the whole investment, since it is
1204 dependent upon that resource situation, but you may recall that that was not by any means the complete statement. Then I divided my answer into two parts dealing with the conditions maintaining at the source of supply and those maintaining at the point of delivery. I analyzed it in terms of the circumstances influencing the certainty, reliability, continuity and cost, and availability of the physical supply on the one hand and the circumstances and characteristics maintaining with respect to the market on the other hand, knowing that a piece of stem pipe line between those two situations is of course helpless to have any determination of its own. It sinks or swims with what happens on the two important ends of the business transaction, the supply of goods or the behavior of the demand

for the goods. I consider that the whole combination of circumstances with the conditions prevailing at the source of supply and the conditions prevailing at the other end, and the fact that you have got a substantial investment in a perfectly helpless piece of capital equipment which has no alternative use but to rely upon the continuity of supply or continued availability of a profitable market to constitute a combination of risk uncertainty elements and economic hazard which is, I believe, quite unique

I did not say that this was a single element. It is the combination of all those circumstances running all the way from the source of supply to the circumstances of the market; and you will recall that I have included in the consideration of the circumstances prevailing in the market the divorce from the control over a merchandising policy in the market.

I thought I had done a fairly thorough and complete job on that subject in my direct testimony. I am of the opinion that I expressed myself rather adequately on the range of hazards and uncertainties prevailing all the way from the fields to the market.

I did not hear all of Mr. Delafield's testimony. I heard a great deal of it. I am not sure that I heard Mr. Delafield state his conclusions that not less than 8 per cent would be a proper return for these companies.

I tried to make it clear in connection with another question, the one that Mr. Slaff was having trouble with earlier about pure interest and bond yields, that pure interest might well be higher than an indicated bond yield on a fairly riskless investment. Let us assume for theory purposes a riskless investment. People might be willing to sacrifice, under given conditions waiting for a critical time, pure interest in favor of liquidity, and that is why I could not answer your question earlier in the form in which you put it to me. It is not necessarily true that the pure interest coincides with the yield on a riskless bond.

I do not see how I can go on record as agreeing with Mr. Delafield because I cannot begin with the premise of the measurement of pure interest in that form. As I said later this afternoon there is no objective market expression of the concept of pure interest as such. It is an element of loan interest but it is never sold in the pure form of

and by itself; and I definitely testified that I did not
1205 accept the generally loosely accepted proposition that the yield on government bonds represents pure interest.

You ask whether or not approximately two years ago in connection with my testimony before the Illinois Commerce Commission as to the rate of return of Peoples Gas Light and Coke Company I stated the rate of return I had fixed was divided and 3 per cent allocated by me to the element of pure interest. I do not believe that accurately states what I testified to. It is a long time ago and you have looked at the record and I have not; but knowing what I think and how I have always thought, I would be rather doubtful that I put it in that form.

Referring to the language you have read to me which you state to be from pages 9272, 9273 and 9274 of the transcript of the case of the Peoples Gas Light and Coke Company before the Illinois Commerce Commission, reading as follows:

"I think that 3 per cent is a fair per cent to use for pure interest in the make up of the 7 per cent. The portion of the remaining 4 per cent allocable to risk is a matter of opinion. I would be inclined to believe that the return available to capital in an industry of this sort as a whole, and the type of company performing work * * * that the risk and uncertainty at any time over and above pure interest certainly would reach, well, to the 3 per cent level."

part of that quotation sounds familiar and part of it sounds as if somebody wrote it who did not understand his economics too well, to tell you the truth. My recollection of that, Mr. Booth, and this is only my recollection, is that you were asking questions along similar lines, trying to secure a quantitative identification; and my recollection is that I made substantially the same answers indicating that you were invading a field of judgment and that these things were not reducible to quantities in that fashion. Your persistance may finally have won a degree of compliance in the form of saying, "Well, 3 per cent is often thought of as representing that" and if you wanted that, all right; but I knew perfectly well then, as I know now, that there is no objective market reflection of pure interest. That is the best of my recollection at the moment. I have not seen or thought of that record since that day. It may be in my

office. I think I got one once but assure you that I did not open it. I would not be sure whether I have what was given or not.

Mr. Delafield in his testimony apparently did combine in his answer two things. If I understand the pertinent paragraph, it is this:

"I said in the direct testimony that a good measure of pure interest at the present time was the rate on the bonds held by all New York savings banks which in 1938 was 2.87. I should think that between 2¾ and 3 per cent of the 8 per cent in that range would be pure interest and the balance risk premium."

That is a combined answer and there is much in there that I cannot agree with. I do not think that the return
1206 on the bonds held by all New York savings banks is a measure of pure interest; and I do not think there is any objective measure of pure interest, as I have stated many times. If there could be a measure I do not agree that this would be the measure because savings banks are practically bomb cellars for capitalists just scared and hiding there. That is not the people's time preference at all. I disagree with it. I cannot follow the line of reasoning that between 2¾ and 3 per cent of the 8 per cent is pure interest. Mr. Delafield did say on page 5175 that his best judgment is that 8 per cent would be divided into approximately 5¼ for the risk premium and 2¾ for pure interest but he adds, "But I would not necessarily have to divide them 3 and 5". I agree with that. I have grave doubts whether that statement is accurate and I think if I have to accept this procedural analysis that I would not be inclined to take that position, taking the position primarily that that is not determinable in that way. A man may have an opinion of that and it might be perfectly legitimate; and he may think of pure interest as Mr. Delafield thinks of it in terms of a riskless investment. I have not any quarrel with that; those are his mental processes by which he arrived at his judgment; but I just cannot do it that way.

Question by the Examiner.

I do not believe that a question of this sort is reducible to that sort of a quantitative breakdown. We have no objective evidence as to what pure interest rate is. We have economic bases of thought and analysis which establish our

presumptions and notions as to how that phenomenon is probably behaving under different sets of circumstances or facts; but that is still a long way from saying that in February of this year it is this much and in March of another year it is that much. We know what influences people's saving dispositions, for example, Mr. Examiner. Suppose you are facing a threatened inflation. We know by the study of historical experiences that in the face of threatened inflation people's disposition to save for the future goes all to pieces. That is a common social economic phenomenon.

It enters into my figure of 8 per cent as a factor recognized as making up the measurable phenomena of loan interest. It is one of the elements in the thing which is objectively expressed, namely, loan interest.

Cross-Examination Resumed by Mr. Booth.

If my answer is properly construed I would be willing to go into the question of whether 2¾ per cent was high or low as to the element of pure interest today. My personal opinion is that it is probably low as of present enonomic circumstances. I have probably a conclusion in the direction of opinion that the market value of time preference has gone up. There are a great many factors which enter into that. It would involve an analysis of our whole institutional setup and our social and political organization.

Take for example the psychological effect ultimately of society taking over the responsibilities of old age, the development of comprehensive plans of social security

1207 That is having a psychological effect on people's disposition to save, which I believe is something we are going to have to reckon with. Factors of that sort influence phenomena as fundamental as time preference. The distribution of wealth among a people has been recognized from the beginning of the science as an important factor. You get a concentration, and there is ease of saving and accumulation of capital. You get a more equal distribution and we note the opposite phenomena. Thus for example that would give some basis for believing that we are headed toward a higher pure interest factor and that is not a wholly theoretical consideration. It is observed by such practical financial analysis as Chamberlain in his old edition of Bond Investment as to what influences the interest

rate on bonds, and he notes the distribution of wealth among the people of a community.

A wide range of social economic factors of that sort enter in, and in passing judgment on how the pure interest element is probably going, you may recognize and consider those, but that still is far from getting any market evidence that it is 2¾ or 3⅛. I would put it the way I did put it. I think there are a great many forces operating to advance the pure interest rate to a higher level. I do not know whether 2¾ per cent is higher or lower than the actual figure but whatever it is I would be inclined to believe that it is headed for higher levels.

I have testified that I do not believe the yield on long-term government bonds is acceptable evidence of pure interest. I have testified that I know that there is no objective market evidence of pure interest.

I know that the bonds of defendants are held by the equity holders or stockholders. Since refunding those bonds at a lower rate of interest is entirely almost a transaction of the right hand with the left hand, I do not see that there would thereby be anything involved one way or another as far as the equity holders are concerned. I may be wrong about this observation, but I think that there is an income tax advantage in having a deductible interest charge which is obviously a payment out which you you can save yourself on to some extent; and if I were involved in it I simply would determine as a matter of fact whether or not I am not saving money by having these bonds outstanding.

I do not recall that I ran across any suggestion that defendants had made any effort to refinance their bonds, outside of apparently somewhere in the record I recall reference to a contemplated public financing or contemplated issue of these bonds at some time which apparently was found impracticable under the market conditions and it never transpired. That is the total recollection I have of any reference to financing. I don't believe I ever talked to Mr. Brown about that.

1208 FLOYD C. BROWN, a witness for defendants, called temporarily by Mr. Booth, testified as follows:

Cross-Examination by Mr. Booth.

You ask me whether or not the company has made any effort to refinance its securities. What do you mean by "attempt"? As far as I know the company has never considered the situation just expressed by Mr. Dorau, namely there being an income tax advantage to the company in retaining its present capital structure. I do not believe the company at the present time has any definite plan in mind for refinancing its securities. I would not say that we have not had such a plan in mind during the past one or two years. We have discussed from time to time the public financing; but for one reason or another any thought of doing public financing has been dropped. As to whether or not it would make any difference to the position of the present equity holders if the company refinanced its bonds at a lower rate of interest would depend on whether there was any public financing or not. Otherwise I think it would involve a matter of some accounting, probably a matter of analyzing the tax laws and determining whether the deduction for interest as an income tax item was offset by the tax upon undistributed profits or dividends, as to whether the equity holders received their money in dividends or in interest. Those are all matters that would have to be considered. We have not considered those matters in the connection as to whether we should do any refunding or not.

1209 H. B. DORAU, a witness for defendants, recalled, testified as follows:

Redirect Examination by Mr. Morgan.

Referring to the language on page 5120 of the record here when Mr. Delafield was asked the question:

"How do you find out what the pure interest is in an investigation of this sort," and he answered—

"Well, it is very difficult to put your finger on the exact 1/100 of 1 per cent determination of what pure interest would be at any given time. There are a great many meas-

ures. By applying many measures, you come to a judgment figure. It has been frequently done, it has been done over a long period of years. Ordinarily, you would look to the yield of very high grade securities, as for example, government bonds. Now, you frequently have periods as you have had, in my opinion, in the last seven years when government bonds generally for a multitude of factors, sell at much less than the pure interest rate. There are other factors in there."

I think that is an infinitely better statement than the one I was offered as a basis of comment. I think I could be in substantial agreement with that.

(October 23, 1939)

(At this point the Examiner announced that the items relating to lands in fee and rights of way in Exhibit 125, temporarily excluded at the time Exhibit 125 was admitted in evidence, would be admitted in evidence. The counsel for each of the two Commissions objected and were allowed exceptions.

(Motion to strike Exhibits 141 and 142 by counsel for the two commissions taken under consideration.)

1210 At this point the following letter written by defendants' witness J. A. Emery to the Examiner was incorporated in the record:

Ford, Bacon & Davis
39 Broadway,
New York.

October 11, 1939.

Mr. E. G. Simpson, Examiner,
Federal Power Commission,
Washington, D. C.

Dear Sir:

As requested by you, I have examined the available data relating to Southern Natural Gas Company, Union Gas of Canada and Lone Star Gas Company to see if any reason is apparent for a lower rate of return on the market appraisal of the securities of the Southern Natural Gas Company than the return on the securities of the other two companies in 1938.

In 1938 the Southern Natural Gas Company increased its compression equipment so that it raised the carrying capacity on the main line from 125,000,000 cubic feet per

day to 145,000,000 to meet the requirements of important additions made to the steel manufacturing plants in northern Alabama. This naturally held out the promise of greater earnings and would account for somewhat higher prices and, consequently, lower earnings-price ratios based on the earnings of 1938.

Very truly yours,

(s) J. A. Emery.)

1211 J. A. EMERY, a witness for defendants, recalled for cross-examination, testified:

(October 23, 1939)

I would like to make a couple of corrections in the record, if I may. The record reads that Mr. Hill was president of the Interstate Natural Gas Company. Mr. Von Publ of our firm was the president, and Mr. Hill was manager. The record reads that Mr. Hill was president of Southern National Gas Corporation. He was vice president and general manager. The record also states that the Interstate line was 22-inch and 18-inch. The main line was 22-inch, and the line from Baton Rouge to New Orleans, owned by Southern Gas and Fuel Company, a subsidiary of the United Gas Company, was 18-inch.

Cross-Examination by Mr. Slaff.

I have gone over most of my testimony on direct. There are some parts that I have rather skipped over. I have had Mr. Timberlake and some others in our office go over it carefully. The corrections which I have just stated, outside of some corrections in English, are the only corrections I have to offer with reference to the transcript.

I should say that I am a professional witness or professional expert. That is to say, an important portion of my work is the supervising and preparing of testimony for rate cases and testifying in rate cases. The majority of my testimony is on behalf of public utility companies, using the term generically. All of my testimony relating to going concern value or rate of return has been for companies of that character, except possibly one case in which the City of New York was interested. That was the Interborough tax case. I testified for the Interborough, and the city was interested on the same side of the case. I was

retained in that case by the receiver of Interborough Rapid Transit Company and testified for him.

The case involved the value of the lease by Interborough of the original subway in New York for the purpose of an amortization deduction in their income tax return. I don't remember whether a refund was involved or not.

I am being paid by the defendants in this case. During the year 1938 my firm received $20,000 in fees from this company. All of that was in connection with my services on the subject of rate of return and going concern value. According to my recollection the total amount now is about $32,000 for the two years. I don't know whether all of that has been paid or not. The amount of the last bill, I think, was $4,700. I receive a per diem fee under my contract with defendants. I don't remember what this per diem is. The standard rate for my time is $150 a day. I think that is the rate in this contract, but my recollection fails me. On this case it is my recollection that that per diem applies on any work whether at the office or in attendance at the hearing.

1212 The members of my organization who devoted their time to this work were paid varying amounts. There is no additional charge or loading of the contract for Ford, Bacon and Davis overhead. The bill covers only the salaries and actual out-of-pocket expenses. I prepared the testimony and am testifying here because I was paid for the work.

We own a considerable quantity of stock in the Southern Natural Gas Company, and naturally that stock would be affected by the rate or return allowed in this case. Our firm owns 20,000 shares of the new stock of Southern Natural Gas Company. We formerly owned approximately 40,000 shares of Class A and Class B stock. This stock was called in and new stock was issued. We were among the largest stockholders in Southern Natural Gas Company prior to the reorganization.

If Southern Natural's registration with the S. E. C. shows our company to have been the largest stockholder of the Class B stock, I would accept that statement. Our firm has a representative on the Board of Directors of Southern Natural, namely, Mr. Von Puhl. We no longer have the management of that company but are retained as consulting engineers. That company is subject to the jurisdiction of the Federal Power Commission, I understand.

The rates of earning on settled enterprises are probably

somewhat lower now than they have been in the past. I think the rate of return required for what is called "venture money" would be probably higher than in the past. I make a distinction between venture money and money invested in an established business which has a history and is developed. I should say the rate of earnings of business of the latter type are lower. My conception of rate of return depends on the rate of earnings to a large extent, as the exhibit I have presented on that subject shows. I think the rates of return on that type of business are lower at the present time than formerly. According to my recollection they are lower now than they were in 1934.

I am not fully clear yet as to just what you mean by "rate of return." The rate of return as I have used the term in my testimony is lower now than in 1934, in my opinion. It is lower now than it was in 1929 or 1930. I think it is lower now than it was in 1915, 1916, and 1917, but that was a semi-depression period, and I am not completely sure of it. Of the three years last mentioned, 1917 was good, 1916 was medium. The country was in a moderate depression in 1914 and slowly recovered from it. It was well out of that depression by 1917. In 1916, there were as I say medium times, and somebody else might say pretty reasonably good times. I think rates of return today are lower than they were in 1916. According to my recollection they are lower generally now than they were in 1912. I am sure that interest was higher in 1912, but I am not sure that the equity rates were higher in 1912.

I understand that your questions have been directed at properties in the nature of public utilities. Where I refer to the interest rate and the equity rate I cover the annual compensation for the use of the capital. Generally there are some small items in addition, but that is the general explanation. By earnings available for equity money I mean earnings available for dividends. The comparisons I have been making were of established businesses with a history. I was directing my answers to public utilities or properties in the nature of public utilities, such as electric, gas, water, and telephone companies. Gas companies include both artificial and natural gas enterprises.

1213 In a broad sense, railroads, street cars, and buses would be so included, but in the last ten or fifteen years they have been classed as tractions, that is street cars and buses. Railroads are generally stated by themselves. My answers do not include these three types of industry

but were directed to public utilities, covering principally electricity and gas. The gas companies include only distributing companies. I consider that a fair rate of return for defendant companies now would be less than I considered a fair rate of return for them to be five years ago. I made specific studies five years ago in respect to a fair rate of return for these companies, and I made specific studies today in preparation for my testimony in this proceeding with respect to a fair rate of return. I testified five years ago concerning a fair rate of return for these companies before a Special Master. In that connection I prepared certain underlying studies and exhibits which were introduced in evidence in that case. I do not understand that the defendants here were parties to that litigation. I did not appear as a witness for these defendants in that case.

I am not influenced by the fact that I am paid by the company in the testimony that I give. My testimony is the same that it would have been no matter who was retaining me on the subject of a fair rate of return for this company. The case in which I testified five years ago was Chicago District Pipeline Company versus Lindheimer and other members of the Illinois commission. I used, as I just stated, certain compilation of data, certain statistics, and arrived at a figure for rate of return by the process described in my testimony in that case. I considered the methods I then used to be the best then available. I thought they were sound, but I think we have better evidence today. I would consider that the methods used in 1934 for my testimony were sound today. I made some attempt to apply them here but not very seriously. I think we followed through with one method completely in the early part of 1938. That was the first method that I presented in the old case where we started with the rate of return on bonds. I do not remember the number of the exhibit we used in that case. We made no attempt to follow that method through in the preparation of our testimony in 1939 in this case.

I have appeared as a witness before the New Jersey Board of Public Utility Commissioners. That was in 1934. I have not appeared before them since then. I think the Chairman is still the same man. I don't know as to the others. I have a conception of the ordinary political meaning of "radical." I have heard that term applied to various regulatory bodies. If you mean by "radical commis-

sion" one that has made an effort to beat down public utilities, I do not think the New Jersey Commission is of that type. As I said, I am only familiar with the fact that the present Chairman is the same one that was in office in 1934. I do not know about the other members. The Commission, as it was constituted when I appeared before it in 1934, in my judgment was an eminently fair-minded commission.

I am acquainted with Mr. William Mulligan, Assistant Counsel for the Board of Transportation of New York City. He was counsel for the board before whom I testified in the Interborough Rapid Transit Company matter. That was last year. I consider Mr. Mulligan is a temperate and fair person.

1214 In my direct examination I covered and considered all of the hazards of the natural gas industry that I could discover after careful examination. I considered all of the hazards as I conceived them at the time I testified. In a general way I went into those hazards in my direct testimony. I described all of the bad features of a possible investment in the natural gas industry or in this company. I don't remember that I mentioned any advantages that the natural gas industry has over any other industry or that this company has over any other company or other types of company. This industry has some advantages by comparison with some other industries, and it has some advantages as an investment when compared with some other companies.

(Upon objection by Company counsel the Examiner refuses to allow Commission counsel to question the witness as to his intentions of presenting a complete and fair statement of the subject of rate of return in his direct testimony.)

It is certainly my intention to be fair to all parties concerned when I testify as to a fair rate of return. I so intended at the time I testified on direct examination.

I would like to call attention to the fact that I have not compared this company or this business with other businesses. I simply started with the actual results from 11 companies, representing in my opinion a fair cross section of the natural gas industry as applied particularly to production and transmission. I have testified on the subject of rate of return in other cases. I testified in what is known as the Dayton Case as to going concern value. That is the case that ultimately went to the Supreme Court and is re-

ported in 292 U. S. I did not testify in the Columbus Case. Some testimony offered in that case was prepared generally under my direction. That testimony dealt with going concern value. It did not deal with rate of return.

I testified in the Logan Case before the Ohio Commission, but that was not within the 10-year period covered by the list which I sent in. I don't think I testified concerning rate of return in that case. I have not reviewed lately the cases in which I have testified on rate of return except as to those within the last ten years. I don't have any present recollection of testifying to rate of return in the Logan Case. I remember testifying on the subject of going concern value. I testified in the Chicago District Pipeline Company case on the subject of rate of return. I saw a copy of the Master's tentative or preliminary report, whichever it was, and the rate of return mentioned in that was considerably less than the rate that I testified to as my opinion.

I testified on the subject of going concern value in the Dayton Case, in which I testified that a separate allowance should be made for going concern value. I supervised the preparation of testimony and the presentation of the testimony in the Dayton Case on the subject of rate of return and also in the Columbus Case. In the latter case also the purport of the testimony on going concern value was that a separate allowance should be made for going concern value.

I testified on the subject of going concern value among other subjects in the Public Service of New Jersey case involving the electric rates of the Public Service Electric and Gas Company of New Jersey. The purport of my testimony there was that a separate allowance should be made for going concern value. I testified to the same effect before the New York Commission in the Syracuse Lighting Company case. In the Dayton and Columbus cases no separate allowance was made. I don't know what was the disposition of the Syracuse Case. In the New Jersey
1215 case the decision of the Commission gave a lump sum covering both tangible and intangible property. The amount they fixed was less than the amount of reproduction cost new less depreciation plus undistributed construction overheads and before the addition of a separate allowance for going concern value. I did not testify to the cost of reproduction new. In that case we took the book figures of the investment in the property and trended them by

general accounts down to the then present time. I do not believe that could be called a reproduction cost new estimate. It produced an answer probably somewhat on the order of what a reproduction cost new estimate would have been. I did not testify to the reproduction cost in the Dayton and Columbus cases in which I testified as to going concern value.

I have not been previously aware of the New York Commission's opinion from which you quote, "No separate allowance will be made for the element of going concern value." I do not remember any statement by me in 1934 that the Northern Natural Gas Company was distinctly inferior as an investment to Natural Gas Pipeline Company of America; but I may very well have said that in 1934. It is my recollection that that distinctly was the case in 1934. I think it went through a reorganization, but I have not the details in mind. I think it is doing very well now. I have not had occasion to look into it, but it is my impression that it is doing about as well as this company. I have had no occasion to change my belief as to its status in 1934. To the best of my recollection the Northern Natural Gas Company was projected without large contracts in Minneapolis and St. Paul which they hoped to get, and the depression came along and left them in the lurch, so to speak. That was in 1933 and 1934, and I think it was reorganized. I cannot be positive about that, though. Since 1934 they have gotten contracts for St. Paul and Minneapolis. I have not made a detailed study of the comparative merits of Northern Natural and these companies as an investment. I don't know of any reason why it is not as good. I do not have the earnings statement in front of me. So far as I know, the Northern Natural is not superior to the defendants as an investment at this time. I cannot think of any reason why the Northern should be inferior to these companies at this time. The line is shorter and is run at conventional pressures of about 430 pounds. It is about 800 miles long, and its principal market is farther removed from the coal and oil fields, so that it is not subject to such a close competitive situation as the Chicago line. Its principal market is in Minneapolis and St. Paul.

It is not necessary for me to consult the document from which Mr. Slaff has read and which he says is a report of the testimony in the Public Service Electric and Gas Company of New Jersey case. I only would like to be sure that it is clear that that was not what is ordinarily called

an estimated cost of reproduction new. Qualified as I have stated, it was called an estimate of the reproduction cost new of the property.

A sound capital structure for a natural gas company of the type of these companies would be, say, 50 per cent bonds, 25 per cent preferred stock, and 25 per cent common stock. I think the proportion of preferred stock would be too high if raised to 30 with a reduction of common stock to 20 per cent. It would not be as sound a financial structure as the one first suggested.

I have had no occasion to change my mind in the past year or two as to the propriety of providing a fund for the amortization of an investment which has a limited
1216 life; and I think the sinking fund basis of computation is the preferable way to do it. I am not conscious of having changed my mind at all as to the method which I deem proper to use in determining what is a proper interest rate to be credited to such a sinking fund. It depends on the circumstances. I do not think I have in the past in my testimony indicated a method of arriving at the proper rate of interest to be credited to a sinking fund built up to amortize a limited life investment. There may have been some question of that kind involved in the Interborough tax case, but I don't remember. In the latter case the question centered around the value of the lease, which was principally represented by the annual earnings for a given period of years, and the problem was properly to discount those earnings. The only question of amortization that arose, as I remember, was the amount that should be deducted from year to year in the statement of income tax. The life of the investment was limited by the life of the contracts to operate the subways. In computing the present value I testified in that case as to the value as of the year 1912 of the contracts awarding the right to operate the subways. I think that was in effect testifying to the present value of a limited life investment. In arriving at that present value I deemed it necessary to provide out of earnings over the life of those contracts for the return of the purchase price at the expiration of the contract, as well as for the annual return. This contract conferred the right to operate the New York subways and covered only the original line.

The amortization to which I was testifying covered the investment which I thought a willing purchaser would make in that property as of 1912 if he had an opportunity to buy

it from a willing seller. We were amortizing the investment over the life of the property or providing for its amortization during the continuance of that contract.

I think my testimony was given between two and three years ago. According to my recollection I testified to the language appearing on page 299 in the record of that case as follows: "In computing the present value of the future earnings to be used in the basis of purchase, it is necessary to provide out of the earnings for the return of the purchase price at the expiration of the contract as well as for the annual return thereon. This is computed by setting aside out of the earnings each year the amount that will accumulate with interest to equal the purchase price at the expiration of the contracts. I have estimated the rate of interest at which such fund can be expected to accumulate at 4 per cent per year, based upon the average yield of ten first class railroad bonds at December 31, 1912, which is 4.14 per cent."

I testified to the language you quote from page 5272 of the record in this case as to the experience of my firm in the natural gas business. The question to which that was the answer was not directed to me personally. I have not personally designed or constructed any lines. I have not personally participated in the financing or raising of necessary capital except insofar as consultations in the firm's offices have taken place regarding our participation. Personally I have had a very small part in that. I have joined in the discussion a great many times about it. I have never had any direct responsibility in connection with it. I have not had a great deal to do with the development of the market. I did some work along that line in connection with the Edmonton Company. I have done no actual work in the operation of gas lines and have personally
1217 done no marketing of natural gas. I was the general manager of an artificial gas company for four years.

In my testimony on page 5273 in which I answered: "To obtain the money necessary for the establishment of the enterprise it is necessary to hold out sufficient inducement. First, the safety and facility of conversion of the capital must be provided for, and second, an adequate rate of return," I was discussing in that connection either the rate of return necessary to interest investors in a hypothetical reproduction of the business or that necessary to attract capital from now on for such further financing as the business may find necessary. I make no distinction.

A man confronted with one or the other proposition will take everything into account when considering those propositions. I think that my answer would apply to either situation, and I was making no distinction. A different rate of return would be applied in one instance than in the other. An undeveloped enterprise requires a higher rate of return. As to how much higher, I would have to answer that question by giving a range. The money necessary for a new enterprise would require a rate of return dependent upon the degree of risk, and it might be anywhere from 3 to 10 or 15 per cent higher on the investment than that required for an established company. When I speak of three to ten per cent higher, I am speaking of per cent on investment as distinguished from per cent on the rate base.

I testified on direct that the natural gas industry, particularly when it includes production, is more risky than the average business. By average business in that connection I meant an investment list as you find in Moody's Manual, which list has been presented in the testimony here. In natural gas I was referring to the Public Utility Annual as one of those manuals. The Industrial Volume is another one of those manuals. I would not say that the natural gas industry is more risky than any business that you might find in any of those manuals. The natural gas production business is considered in the nature of an extractive industry. In my answers to the questions on direct, shown at page 5275 and 5276, I had no specific types of business in mind. (Testimony on hazardness of natural gas industry stricken on motion by Commission Counsel.) In my answer quoted from page 5276 in which I said in substance that when compared with an ordinary utility, such as an electric utility or other distributing utility or any type of continuing enterprise, there is more risk involved in the natural gas business, one of the considerations involved in that answer was that the natural gas business is not a continuing enterprise. It is my belief that the natural gas business is not a continuing enterprise.

The Hope Natural Gas Company has been in operation a great many years, since the beginning of this century, that is, it and its predecessor companies have been. Some of the subsidiaries of the Columbia Gas and Electric Company have been in business a great many years. I don't remember just how long the Columbia System as such has existed. That system operates largely in southern

Ohio and that general vicinity. It has a large subsidiary in western Pennsylvania and another one in West Virginia.

The Lone Star Gas Company system goes back as much as 15 or 20 years. I don't know that it goes back 30 years, as you say. The Lone Star Company itself was organized in 1926, and it acquired some gas companies which had been established quite a great many years before that, including the original Lone Star Company established in 1909. The Oklahoma Natural Gas Company goes back to 1933. The predecessor companies go back to about the turn of the century. All of the natural gas systems or enterprises that you have questioned me about in the last few minutes have been continuing along for the last 30 years or more on the average.

1218 I have testified on page 5277 that the pipeline company which owns its gas down in Texas and transports it to distant states like Illinois and sells it to distributing companies is confronted with the same risks as those confronting the distributing companies. If the distributing company has hazards, the pipeline company has them. If it is free from hazards, the pipeline company is free from such hazards. The more stable the distributing company, the more stable will be the pipeline company. A distributing company with a stable business would be more valuable to the pipeline company than an unstable distribution company. A pipeline company is concerned about the stability of the distributing company.

Referring to my testimony on page 5277 concerning the uncertainty of geologists' estimates, it is true, of course, that the error in estimate may be in one direction as well as in another. The geologist may underestimate the life of the field or the amount at the source of supply as well as overestimate. (Objection by Company Counsel overruled.) I think it is correct that the natural tendency of a geologist of a well-managed, conservative producing and transmitting company would be to underestimate rather than to overestimate the amount of supply. The reliable and well trained geologist will always take the conservative side. As a general rule, conservative and sound financing would require underestimating the amount of supply rather than overestimating it. You inquire whether with respect to operating revenues of such a company the same conservative and sound policy would require the underestimation of future revenues. (Objection by Company Counsel

overruled.) I do not like to make such a sweeping answer as yes or no to the question. It is often the case that it is just as bad to make an underestimate as an overestimate, and I think in the case of revenues and operating expenses the practice would be to make those neither over nor under. As to the distinction I draw between the geologist and the man figuring operating expenses, I think my answer concerning the geologist was that I think a reliable man would take the conservative side. (Objection by Company Counsel overruled.) The distinction that I would make between the geologist and the revenue experience would be the difference in the quality of the evidence available. The geologist uses the best evidence that is available to him. A witness coming in here on a case like this would want to be sure of his ground, and I think that he would be inclined to overestimate the reserves.

Cross-Examination by Mr. Booth.

I testified in the proceeding known as the Chicago District Pipeline Company versus Lindheimer. I did not testify as to a proper rate of return for Chicago District Pipeline Company but merely as to the proper rate of return for the two pipelines here involved. I think I knew that in that proceeding there was evidence submitted by geologists as to the life of the reserves of Texoma Company in the Panhandle field. I have no definite recollection of it. I did not make any studies or examine estimates of the reserves of the Panhandle field or familiarize myself with such estimates. All I know about it is what I have been informed by the officials of these companies. They informed me merely as to the estimates which have been made in this proceeding. They did not tell me that the same geologists or any of them in the Chicago District Pipeline case testified that the life of the reserves were substantially shorter than they now testify in this proceeding before the Federal Power Commission. I made no inquiry as to whether or not the geologists who have testified in this case had made prior estimates indicating a shorter life than they now estimate.

Cross-Examination Resumed by Mr. Slaff.

The conservative side in making an estimate is sometimes higher and is sometimes less. That is, going before a banker I think the conservative side would be to
1219 underestimate, but for a proceeding like this I think the conservative side would be to overestimate. You inquire whether I mean to say that a reputable geologist will express one opinion as to reserves to a banker, and a different opinion as to reserves to this Commission in dealing with exactly the same subject matter. (Objection by Company Counsel overruled.) This is a matter that cannot be determined to an exactitude. There is bound to be something of a range. In a case involving any uncertainty I think a geologist in making such an estimate would be apt to state a range. I certainly do not think that he would categorically make one statement in one place and a different statement in another; but I say that in any estimate provided, he would take the conservative side, whatever that might be. I do not think he would go out deliberately and give different answers with an intent to mislead in any way. In one case he might say "Not less than," and in another case he might say "Not more than."

With respect to financing and with respect to the testimony in a rate proceeding, my judgment is that the only difference that a reputable geologist might make in the estimates which he would present in either case, referring to the same subject matter, would be to say in one case "There are not more than X number of feet, in my judgment," and in the other case "There are not less than X number of feet, in my judgment." I do not think that the natural tendency for an employee of a company estimating future operating revenues for financing purposes would be to deliberately overestimate or underestimate either. There is a field for judgment as to what the operating revenues will be, say 10 years from now. He cannot be precise at all at the present time in determining what the operating revenues will be 10 years from now. He cannot tell when he is prognosticating 10 years ahead whether he is going over or under. I would say that prognosticating 10 years ahead is more of a guess than if it were for only one year ahead. In a business of this kind I do not think you are in a field of pretty wide speculation when you are attempting to estimate 10 years ahead, if you assume a continuance of

present or known changes in conditions. The only basis on which estimates can be made up is on that of present conditions or known changes. I don't know and I would not predict today that such conditions will exist 5 years from now even. I would not predict as to what conditions will exist 10 years from now or in the range of 5 to 10 years from now. I would not predict today what conditions are going to exist 15 years from now or in the range of 10 to 15 years from now. An estimate respecting revenues 10 years from now is pretty much of a guess insofar as they are affected by changes in fundamental conditions. The same is true of operating expenses insofar as they are subject to change by radical changes in conditions. By radical I mean important changes in conditions.

I don't think a man in trying to estimate revenues and expenses for the future would attempt to prognosticate conditions or make any allowance for changes. (Objection by Company Counsel overruled.) The basis for the estimates of this company is a sound one now. They have had several years of more or less uniform experience behind them, and they know just what to expect under normal conditions. I am speaking about the estimates that might be made for this company; the estimates that Judge Morgan says I don't know about. I have not seen the future estimates for this company. I have seen some of these estimates that have been submitted as exhibits but I have not studied them. I would say that it is absolutely impossible to make in estimates any allowances for possible changes in conditions, and that estimates should always be predicated on a continuance of present conditions or known changes. An example of known changes would be the rise in the unemployment tax. What I have said with reference to present conditions or known changes applies to the operating expense estimates for the future mentioned a little while ago.

1220 I do not know what drafts the Texas Panhandle field is subject to for purposes other than pipeline purposes. I do not know what drafts it is subject to for other pipeline purposes. I do not know what drafts it is subject to for carbon black or gasoline stripping purposes. I don't know enough technically about the manufacture of carbon black to say whether sweet gas or sour gas is used in its manufacture. I don't know enough about the operations in that field to answer as to which type of gas is used for gasoline stripping. I understand that this field is sub-

ject to salt water intrusion, and I read Mr. Brown's testimony that it is. I am referring to Mr. Floyd Brown's testimony. All I know about it is what I read in Mr. Brown's testimony and what I have heard other people about the office say. Mr. Hill and Mr. Rhodes of our office are familiar with that field. Mr. Rhodes is one of the vice presidents of our company. The basis of my knowledge depends on my reading of the testimony of Floyd C. Brown and the discussions I have had with Mr. Hill and Mr. Rhodes of our organization.

What I know about the migration of sour gas into the sweet gas areas of the Panhandle is based on the same sources. I cannot name the specific discussion of these subjects; but it is one of the matters that have been talked about at different times in my hearing. I know nothing specifically about the migration of gas from the sour to the sweet areas except what is contained in Mr. Brown's testimony. I know nothing about whether the intrusion of salt water in the Panhandle is from above or below the gas producing areas. I know nothing about the predictions that have been made with respect to future drafts on the field. I am in no position, therefore, to state whether the company witnesses in this case have underestimated or overestimated drafts for the future. I have made no effort to ascertain what the company's estimates of future drafts have been. I know nothing beyond the estimated future life of the field that has been presented here in the testimony. I do not know what the withdrawals from the field have been in the last five years, the last ten years, or during any given period in the life of that field, or how such withdrawals compare with the withdrawals in any other given period.

I testified as shown on page 5278 of the record that the fact that another pipeline should be built or that other carbon black industries should enter the field and utilize sour gas for the manufacture of carbon black would tend to limit or reduce the amount of gas available for this company. In answer to your question whether that will necessarily follow I cannot say any more than that would intend to. It is a matter of common judgment that if more people use it, it will be exhausted sooner.

I know nothing about the migration of gas from one part of that field to another. I know that gas migrates and that migration in that field is considered to be rather greater than in the average porous field, so I would think

that if one man drew gas from one part, the gas from the other part would tend to migrate to it. I mean it would migrate.

I do not know anything about the Texoma Natural Gas Company reserves in the field. I do not know anything about the Texoma Company's requirements for the next five years, except insofar as what the sales are now and the expectation of continuing them for the next five years are concerned. I think the entry of another pipeline into the Panhandle field would shorten the life of these 1221 companies. I cannot say how much. That would depend on the size of it and the amount of the draft, but naturally, if any one else comes in there and takes gas, less gas will be left. There would be a migration from Texoma's reserves. I do not know how Texoma's reserves today compare with Texoma's requirements for the next 15 or 20 years, except that I understand that their resources are estimated to be sufficient to supply them for that period. I have no hesitation in saying categorically that the entry of another pipeline into the field would shorten the life of this company, regardless of the size of the pipeline. Naturally, it might shorten it five minutes or it might shorten it five years, depending on the size. Regardless of the size of the pipeline, the entry of another pipeline into this field in my judgment would shorten the life of this company. I am not speaking generally but specifically. I want to make it clear, however, that a very short time, such as five minutes, would not be worth talking about. Anything I talked about in connection with shortening the life of the field is something worth talking about. When I testified that if another pipeline should be built into the field it would shorten the life of the field, I meant that it would shorten it enough so that it would be noticeable. I assumed to testify categorically on that subject without any more knowledge of the field and the geology of the field than I have indicated.

When I testified as shown at pages 5279 and 5280 in effect that assuming that the market is always available and favorable, or the estimates are made altogether under favorable circumstances, it is almost certain that in a term of years there will be some circumstances not favorable, I meant that the estimates would have to be based on the assumption that no conditions essentially different from those at present or now foreseen would occur. When I testified that the providing of an annual reserve for

amortization over the indicated life of the field would not remove the hazard involved in the question of whether or not the capital of these investors will be returned, I assumed that the entire capital investment is to be amortized over the remaining life of the Panhandle field. That would be the estimated period of 16 or 20 years or whatever it was. When I testified as shown by the record at page 5280 that if the funds provided for the return of the capital be distributed over the entire indicated life of the field, an investor would consider that his investment was still subject to hazard, I meant that he could not count definitely on all conditions being favorable.

You asked if he might not consider that the capital would be returned at the end of the period provided for amortization and the business still continue. (Objection by Company Counsel overruled.) That is a contingency that he certainly could not bank on, and it would be a pretty long gamble. He could not bank on the field's going out before the indicated life. He cannot get back funds by banking on any contingency. You cannot bank on any contingency such as the field going out before the indicated life. I was testifying at the top of page 5281 about what an investor would consider. He might consider that the capital he invested would be returned at the end of the period provided for amortization and that the business might still continue. I think that he would be inclined to rule that out as a factor because it is such a long gamble.

With respect to the report of the geologists looking 16 years ahead, I should call that a long gamble. I have not read the reports of any other geologists, and I am basing my judgment on the reports of geologists in this case that have been produced by the company. If an investor considered that the field may last longer than the period provided for amortization and that his capital will be returned at the end of the period provided for amortization, that, in his judgment, would be a favorable circum-
1222 stance insofar as it is a possibility. I think, however, the investor is more inclined to study the unfavorable side because the hazards are on that side. I would say that he studies the favorable side less diligently than the unfavorable side. As to your question of whether he comes to a balanced judgment, in my mind by studying one side of the picture my answer is that it is the customary way to study hazards. In that observation I mean the investor. The foundation of my direct testimony was the investor's

appraisal of natural gas securities as evidenced by the price and earnings. That, I think, is a direct illustration and final answer as to what the investor thinks.

When I was discussing in my testimony the fair rate of return that an investor would demand or want or have to have to be satisfied and to meet all of the conditions of fairness, I did not assume that the investor looked just at the dark side of the picture of the prospective investment. He looks at both sides, but as I said before, I think he gives more thought to the unfavorable circumstances. He tries to take the greatest care possible not to get hurt. He is primarily interested in not getting hurt. I think he gives more consideration to the unfavorable circumstances than to the favorable ones and that these influence him more than the favorable circumstances. It was that type of investor that I had in mind in my direct testimony, and it was that type of investor I had in mind when in answer to the question: "How would that affect the rate of return which he would expect from his investment under those conditions?" I said: "That makes the required rate of return to attract the capital higher," as appears at the top of page 5281. I meant that it would be higher than it would be if there were not such a hazard. If I were asked a question, as you suggest, "In view of the fact that you say that these estimates always are attended by uncertainty, the field might last a year or two longer than 16 instead of playing out or becoming exhausted one or two years short of that period, does that remove the hazard?" I would answer that it does not remove it. It does not minimize the hazard or lessen the hazard because that contingency is always present. I have testified on the direct that the fact that it might last a few years longer would not remove the hazard. I do not think that such possibility would lessen the hazard at all. If there is a possibility that it may last less than 16 years, it does not make any difference if there is a possibility of its lasting 20 years after that, for that does not take away the hazard of its lasting 16 years.

My difficulty in answering comes in trying to evaluate a gamble beyond 16 years. (Objection by Company Counsel overruled.) As to whether the importance of that hazard in the investor's mind is lessened by the fact that the field might last five years more, I believe an investor would say that he has to guard against a hazard and that if the field should run over that length of time it would be just

a matter of luck, but that he would not assign any value to that element. If in the light of the circumstances there was a reasonable probability in the inventor's mind that the field would last longer than the period indicated for the amortization of his investment, I still do not think it would lessen the hazard, but the reasonable probability would have some value. If you should match that reasonable probability against the hazard, it would lessen the significance that the hazard played in his own mind.
(October 24, 1939)

An investor investing his money in this company in 1930 is entitled to have his investment amortized over the life of the field. In 1930 I think an investor would expect his investment to be amortized over the life of the field, whatever that might be, not necessarily at the same rate continuously. His investment in 1939 should be
1223 amortized over the remaining life of the field. By his investment in 1939 I mean what he has in it. I mean the present value of the property.

Question by the Examiner.

In appraising risks as of today with respect to any concern that had a past life and which, during that past life, has earned enough to set up an amortization reserve during that past life, in appraising the risk of a going concern like that I do not think in the case of an unregulated industry that I would take into account that its earnings had been favorable in the past, and I did not do so in this case.

Cross-Examination Resumed by Mr. Staff.

In stating that the investor in 1930 should have his investment amortized over the life of the property, whatever that life may be, I meant that he would expect to get his money back when the life of the field expires. If there were no rate inquiry directed against these companies until the year 1949, and if there was geological testimony introduced by company witnesses in that rate proceeding in that year that the life of the field would be exhausted by 1954, I think the Federal Power Commission in setting up rates should provide for the amortization of the value of the property at that time, whatever it is found to be. In answer to your question whether I am distinguishing between "value" and "investment in the property", I think

the investment in 1930 was what was put into the property. I think the investment now is represented by its value. (Objection by Company Counsel overruled.)

(The following question was asked the witness by Commission Counsel: Q. Now, assume, Mr. Emory, that there is a rate case in 1949, the first rate case this company is involved in under the Natural Gas Act, which then exists as it exists today and evidence is presented by the company of its investment in the company; evidence is also presented at that time by the company of the reproduction cost of the company as it then envisions it do you say that either the reproduction cost or the investment should be amortized over the period 1949 to 1954 and the fund to provide that amortization should be built up over that period, that 5-year period?) (Objection by Company Counsel overruled.) May I explain as a reason for taking so much time to get the question through my head and for having it read over, that it is such an academic and impossible one that it is difficult to visualize it. If the whole investment were intact in 1949, it would be practically impossible to amortize it. That is, this company is within very strict limits as to the price it can get for its products. I still cannot say anything more than that the value, whatever it is found to be in 1949, would have to be amortized or should be amortized in the succeeding five years. By "if the whole investment were intact in 1949" I meant by investment the value found in 1939. In my view, value and investment would become the same when regulation goes into effect. (Objection by Company Counsel overruled.)

When in response to a question at the top of page 5282 reading, "If it runs longer than expected, the situation must be dealt with according to conditions at that time," I answered in the affirmative, I meant that it must be dealt with by the regulating body. In answer to your question as to whether I meant that if the investment were amortized over the estimated life of the field, and it then turned out that the life of the field still continued, the regulatory body could rule by order that the investor having had his capital returned to him, was no longer entitled to a return on the property or on the value of the property, or on his original investment in the property; my answer is that it is my understanding that the Federal Power Commission or the regulatory body would have power to do anything it saw fit. (Objection by Company

Counsel overruled.) My conception of what it could do under the circumstances I have just stated is that it would find a reasonable return on the fair value at that time, whatever that might be. I do not know that the Federal Power Commission cannot do anything it sees fit to do. I understand that its powers are to impose what it considers a reasonable return on the fair value. In answer to your question as to when at the end of the estimated life of the field the investor has his investment completely returned to him and the business of the company still continues, it is my conception that this Commission should then fix the fair value of the property and allow the company a fair return upon that fair value and that that was what I had in mind in my statement that the regulating body would protect the public if it developed later that there had been an estimation of the life of the field. I would not attempt to say what the Commission should do. The Commission would protect the public by finding what they consider a fair value. I understand that is wherein the public protection exists, in confining the company to a reasonable return on the fair value, and, in company operations, by prescribing the accounting regulations. It would protect the public with respect to the underestimation of the life of the field through its finding of value.

1224 As to how the public at that time would be protected against the underestimation of the life of the field that had been made previously, I think the conditions at that time, and the history after regulation went into effect would control. I had nothing specific in mind except that the Commission would hold the company to a reasonable return on the fair value. If the entire value had been amortized, there would be no further provision for amortization. The investor, once having had the value of the property amortized and returned to him and having received a fair return during that period on the value of that property, would from that point on be entitled to a return upon whatever value might be found in the property then, for the rest of the property's life.

Referring to the question at page 5282 in which I was asked: "Why cannot the Federal Power Commission, if we make it specific, protect the investors in defendants against losing a part of their capital due to the lives being shorter than that indicated by the testimony under the most favorable conditions?" and my answer: "Principally because their business is all highly competitive, and

even if they were permitted to charge higher rates, they could not get them," I based the answer on the fact that all of the business of this company has been obtained on the competitive basis by underbidding other people, by underbidding other fuels, and if they raise their rates they will take themselves out of the market.

You ask if that means that they are now charging as rates all the traffic will bear; I certainly would not express it in that way; that is not what it means. (Objection by Company Counsel overruled.) That expression is generally used in connection with a more or less non-competitive business where it is a question between the volume of traffic you can get and the rate. Yes, I have heard that expression used in connection with railroads. I certainly would never express myself in that way, but the meaning and the fact are that there are competitive fuels in the Chicago market. This company to get its business had to bid under them. If it raised its prices and they did not raise theirs, it could not get the business. Practically, I didn't consider that there was any margin wherein the company could raise their rates between I feel that they are charging today as much as they can because of the competitive situation. I do not understand that that expression "all the traffic will bear" would apply to charging what they can under the competitive situation.

In my answer shown on page 5283 of the record, "I should think with this company operating in several states, and also under Federal regulation, it would have to expect more than one," I meant that defendants would probably have more than one rate case on their hands. I was assuming that the rate would be the same at that future time as it now is. I understand that the rates of this company are subject to state regulation. As to whether it is my understanding that the Illinois Commerce Commission can regulate the rates of Natural Gas Pipeline Company of America, I consider it practically the same thing, that is—that they could regulate the rates of the principal user. When I was retained to make a study of the rate of return for these defendants, there was a proceeding before the Illinois Commerce Commission. I, of course, know little or nothing about the law in this matter, the interpretation of the law; but my statement in the direct testimony was made with the understanding that the Illinois Commerce Commission did have or claimed to have some regulatory or investigatory authority over defendants. As far as my

knowledge goes, the Illinois Commerce Commission has no power to regulate the rates of defendants today. I should suppose under those conditions that there could not be a rate case before the Illinois Commerce Commission covering this company alone. The same would apply to every single state in which the company operates.

Redirect Examination Interposed by Mr. Morgan.

From the standpoint of an investor, I do not see that there would be any difference in a rate case conducted before the Illinois Commerce Commission and one instituted by it before the Federal Power Commission. I see no difference in a proceeding pending before the proper commission in Iowa, Nebraska, Kansas, and the one
1225 which they might separately institute before the Federal Power Commission. There could be just as many rate cases on the complaint of the various states as if they had jurisdiction themselves.

Cross-Examination Resumed by Mr. Slaff.

In my testimony I was considering the possibility of the rates being raised. I do not understand that the Natural Gas Pipeline Company would have to go to other than the Federal Power Commission to get its rates raised. On page 5283 I testified that there would be a rate case in the Federal Power Commission and every one of our distributors would have to go and get its rate increased in order to meet the increased price which the Federal Power Commission might provide. I do not know much about the earnings of the distributors who purchase gas from these companies, nor do I know anything about the proper fair rate base or the proper operating expenses or the fair rate of return applicable to any of such distributors, except that I know generally about the rate of return that would be required on the average for such companies. I would not state now, nor would I have stated on my direct testimony what was a fair rate of return for any specific distributor of Natural Gas Pipeline Company of America. (Objection by Company Counsel overruled.) I do not know all the specific facts relating to any of these companies, and such information as I have is to the effect that generally gas distributing companies are not making more than a fair return because most gas distributing companies

are not making a fair return. The competitive situation has exerted such a pressure on them that they have not been able to meet it. I do not have specific information in respect of whether any of these distributors of Natural Gas Pipeline Company of America is today making more than a fair return, so that it could absorb an increase in rates of Natural Gas Pipeline Company of America, such as I was discussing in my answer at page 5293.

A company does not apply to increase its rates every time its operating expenses go up nor does it apply to decreasing its rates every time its operating expenses go down. Operating expenses might go up or down by a small amount without any adjustment in the rates; but if they go up or down by a very large amount, there would have to be some adjustment in the rates. I do not know what proportion of the operating expenses of any of the distributors of Natural Gas Pipeline Company of America is represented by the amount it pays defendants for gas. If we assume that a distributor must have its rates increased, I do not know of any cases of rate increases without a rate case. I do not personally know of any increase in rates without a rate case since regulation came into effect. I made no attempt to find out about any. I therefore do not know about the number of schedules, if any, embodying increases that may be filed with various commissions during the course of a year. I understand that when the Peoples Gas Light and Coke Company applied for an increased rate in Chicago there was a rate case brought against them. (Motion to strike above testimony by Commission counsel denied.) I used that expression, if I may explain, to cover all cases, whether the commission took action to prevent the company from making such a raise or some outside person or body did so. I did not know the exact circumstances, and that is the reason that I said that I understood the facts to be as stated.

By my testimony shown on page 5284 of the record to the effect that while the company has undertaken to predict the cost of additional wells which they can now foresee and the cost of providing field compression necessary to get the gas from the wells into the main line, and has brought in figures showing the minimum costs incident to the drilling of such wells and the boosting of gas into the line, the figures if incorporated in the rate base would not remove the hazard because if they brought in a minimum estimate of cost it could not be expected that all condi-

tions will be favorable for 16 years, I meant the cost as estimated by the witnesses referred to in the question. By the use of the expression "minimum" in the question asked me at that time, I understood the meaning to be the estimated cost without provision for possible changes in conditions which would tend to increase the cost.
1226 (Objection by Company Counsel overruled.) I did not understand that there was any provision made for changes which might tend to decrease the cost. I have seen the figures brought in through these estimates, but I have not memorized them or analyzed them. I have every reason to think they are reasonable estimates, but I do not know what they amount to. I have made no study to determine for my independent judgment whether they are fair or unfair. I do not know whether these figures were increased in the record by an allowance by another witness for contingencies. I do not remember having testified about allowances for contingencies in my original testimony, but I see here that it was mentioned in the record. However, I do not think that the allowance of that 10 per cent would change my answer, because in the course of 16 years I think the contingencies and hazards relating to operating expenses would be more than 10 per cent. I would not attempt to appraise or set a definite figure that I think would make allowance for such contingencies in operating expenses.

I am not intimately familiar with the tentative system of accounts prescribed by the Federal Power Commission for natural gas companies. I do not think that I would say that I am generally familiar with it. I have heard it discussed, but I am not an accountant and know very little about that. I have not looked at it. I am not familiar at all with the system of accounts for natural gas companies recommended by the National Association of Railroad and Public Utility Commissioners. A number of years ago I made a study of a system of accounts proposed to be promulgated by the New York Public Service Commission covering artificial gas companies, and I don't remember just what other authorities I consulted in the course of that study. I know of no system of accounts prescribed by any Federal regulatory body or state regulatory body which does not include maintenance expense as an operating expense. That applies to all types of utilities and regulated companies. I think it is correct to say that in all

such prescribed systems of accounts maintenance is included as an operating expense.

Referring to my testimony at page 5288 concerning the pressure and stress at which this line is operated, what I call conventional stressing runs about 12,000 to 15,000 pounds per square inch. I do not know of any major pipeline that has been built to operate at higher pressures than this line. I do not know of any line built to operate at 1500 pounds pressure. I attempt to keep up with developments in the field. I attempted to make an investigation prior to my testimony here as to pressures at which other lines were being operated, higher pressures as well as lower pressures. I consulted the records in our office and consulted with various natural gas engineers in our office and with officials of defendants. We get Gas Age down at our place. I know Thomas R. Weymouth. I don't know his exact title, but he is a high natural gas official of Columbia Gas and Electric Company. He is also chairman of the Natural Gas Section of the American Gas Association. I do not know anything about the line referred to in the January 1939 issue of Gas Age in which Mr. Weymouth described a development in the pipeline industry as follows: "Another development during 1938 has been the testing out of lines of extremely high pressure. One in particular is a 12-inch line built for ultimate operation at 1500 pounds, but which up to this time has been operated only to a pressure of 1300 pounds."

1227 Pipelines are normally subjected to stresses up to in round numbers 40 per cent of the elastic limit. The Southern Natural Gas Company operates at a stress of 15,000 pounds per square inch, which is approximately 40 per cent of the elastic limit of the steel. The Interstate Pipeline Company, the Colorado Interstate, and the Mississippi River Fuel pipelines are all operated in round figures at 35 per cent of the elastic limit.

The final rate of return figure that I presented here of 9 to 10 per cent includes a consideration of the pioneering skill which this company exercised in three particulars, one of which was the operation at these high stresses. Not only the skill and vigilance of the operating organization was considered, but of the designers and the enterprise of the investors in putting up their money on such a basis. Yes, I did mean that my rate of return included an element of compensation for the vigilance and skill on the part of the operating organization to which I referred at page 5288.

Yes, consumers pay the money which provides for the operating expenses. Of course, the company pays the operating expenses. I really don't know how I can answer that any differently or any more clearly. The consumer pays a rate which is supposed to cover the return and the operating expenses, and the company pays the operating expenses. I have no doubt that in the Public Service Electric case in New Jersey in reply to a question shown at page 3221 I said that assuming a period of years when the company does earn a fair return in effect charges to operating expenses are borne and are paid by the consumer. It is a fact that assuming that the company is earning a fair return, charges to operating expenses are in effect borne and paid by the consumers. The consumers, of course, are the source of the funds from which the company makes its payments. In the same way the salaries of officials and employees of a utility company are paid by the consumers under the same assumption that the company is making a fair return. Generally all such charges are charges to operating expenses. The reason I say generally is that sometimes there are stock options or the privilege of subscriptions offered to officials. All salaries or parts of salaries resulting from operations are charged to operations, as far as I know. The reason I say parts of salaries is that there may be some portions of some of the salaries charged to construction account. Such portion goes into the fixed capital accounts as overhead charges. Operating expenses and charges to operating expense are something entirely separate and distinct from the return or from the rate of return.

In my going concern testimony in this case I testified that the operating organization, skilled and trained as it was, added an element of value to the property over and above the value that the property would have without that organization. In my judgment and according to my testimony the company should receive a return on its going concern value as well as on the other elements that I conceived to go into the value of the company. (Objection by Company Counsel overruled.) It is not according to my rate making concept that the investor is entitled, in addition to the capital value placed on a skilled organization and a return on it, to a further increment of return on the entire rate base because of that skilled organization. Generally I do think that a company is entitled to include in the capital value some value for skilled organization

and that it is entitled to receive a return on that element of capital value. I have not said that it is also entitled to include as an increment or element of its fair rate of return, the fact that it has a skilled and vigilant operating organization. That is true only when extraordinary or outstanding developments have been made. I do not
1228 remember that I have ever testified in a rate case in which I did not testify that the company involved had a skilled operating organization and that that was one of the elements I considered in coming to my conclusion as to the rate of return. I have generally treated the assemblage and training of the organization as an element of value on which the company should be entitled to earn a return, but I have not done so in this case. In this case I did not treat the operating operation and skill as an element of value.

I testified as shown on the record at page 5290 that the possibility of exceeding the elastic limit of the line was a hazard and that the immediate result of exceeding it would be the expense of repairs and the interruption of business, but that if it became necessary to reduce the pressures, it would substantially reduce the earnings. That was one of the hazards I envisioned as being in the investor's mind. This line was designed and intended to operate under the conditions under which it is operating. It was not so intended at the beginning. The operating pressures were raised a few years ago. The design and building of the line was due to the initiative and skill of the originators of the line, the entrepreneurs and their agents. I proposed in my direct testimony that they should be compensated in full for that skill and initiative. If it should develop that the uses to which the line is put so exceed the elastic limits of the line as to cause any failure due to the high stresses, that would not imply any discredit whatever on the builders of the line. This was an entirely new procedure, and they showed great enterprise in going into it. No new thing of this kind can be designed with 100 per cent perfection.

I understood the question on page 5290 to refer to difficulties resulting from high stresses. I would like to add to my answer that the possible deterioration in the pipe and equipment must be considered. In exercising their skill and initiative in the original design and building of this plant, the owners doubtless took into consideration the possible deterioration of the pipe under the pressures

at which it was worked. I cannot directly answer your question as to whether, should the contingency occur, to which I referred in my testimony at page 5290, it would turn such great skill and initiative which I say the displayed was perhaps not as I now conceive it to be. The results so far have been satisfactory. You inquired if it should turn out that over the next 15 years the results should not be so satisfactory as they contemplated, whether or not it would not show that their skill in projecting the enterprise as they did was not as I conceive it to be. That is too general a statement for me to subscribe to. I think they showed remarkable skill and enterprise in what they have done. Of course, what they have done is subject to conditions or hazards that may turn up in the future, but whatever they turn out to be does not detract from the initial skill and enterprise. The measure of the value of the skill is in the success of the skill. I cannot subscribe to your suggestion that if what we conceive to be skillful or skillfully done today turns out to be a failure sometime in the future, that such skill would not have the actual value we placed on it. Hazards entirely unlooked for or changes in conditions entirely unlooked for might arise. If it should turn out that say next year pressures would have to be reduced on this line, less gas could be transported, earnings would be less, and I would say that the skill of the enterprisers in this case was less than I had conceived it to be when, in October, 1939, I testified in this case about that skill. I would say that the value of it is less or that the consideration should be given to it is less. (Objection by Company Counsel overruled.)

In connection with my Exhibit 149 and my testimony in connection with it, I included in my rate of return an element in the fact that the earnings of this line, operated at
750 pounds or thereabouts, are greater than the earn-
1229 ings of the line would be if it were operated at a
lower pressure. Among the hazards I considered in connection with a proper rate of return for defendants is the possibility that the earnings of this line may be reduced through a necessity of reducing the operating pressures below those now maintained.

When I spoke at page 5294 of the record of the fact that I had organized and for about six months was in charge of a valuation of the East Ohio Gas Company, Peoples Gas Company, and the Hope Natural Gas Company, I was referring to work I did in a rate case. Those companies

are so-called Standard Oil Company affiliates. My firm and I do considerable work for the Standard Oil and its affiliated companies. The Standard Oil of New Jersey is one of the large owners of Natural Gas Pipeline Company of America. That company owns 13.31% of the stock. Our firm is now doing a job in connection with the Colorado Interstate in a rate proceeding. It also is a Standard Oil affiliate or subsidiary. We are also doing a job in connection with a rate investigation involving the Hope Natural Gas Company.

It is true that at page 5295 of the record I stated that for the past twenty years I have been more or less intimately connected with natural gas matters, that this had been one of the activities of the office, and that financing matters are almost always discussed among us. I am somewhat familiar with matters involving the financing of the Southern Natural Gas Company. I know that that company has outstanding a loan of $1,500,000 by a bank. My Exhibit 148 shows it to be $1,489,000 as of December 31, 1938. The interest rate on that loan was 4½ per cent. I do not know that the rate is 4 per cent today. This information was as of December 31, 1938. I don't know what bank holds that loan or where the bank that holds that loan is located. I do not know anything about that loan or its status today. I don't believe I have had any discussion with any one in my firm respecting that loan in the past month or two. I came back from my vacation early in September. No one has discussed the Southern Natural with me during the past six weeks. I have discussed the Southern Natural in the past with Mr. Von Puhl and Mr. Hill. I have stated that Mr. Von Puhl is a member of the Board of Directors of Southern Natural and that he is a member of my firm. He did not inform me that the interest rate on that bank loan had been reduced in July, 1939, from 4½ per cent to 4 per cent. I don't think I said I was intimately connected with the details of financing and financial matters around my firm. I said, "Financing matters are almost always discussed among us." I don't know whether this particular transaction was discussed in the office or not. I was out of the office in July. I am not familiar with this or that Southern Natural has pending before the S. E. C. now an application for a declamation involving a reduction of the interest on this bank loan from 4½ per cent to 4 per cent. I do not know that there is such an application pending. I have not heard of it. I have not

heard at all since my return that Southern Natural was before the S. E. C. in connection with anything. I left on my vacation early in July. I had no intimation about my office prior to leaving on vacation that any attempt was being made to procure the lower rate on the Southern Natural's bank loan. There was no such discussion to my recollection.

(At this point counsel produced a letter with the request that it be marked for identification. At the direction of the Examiner it was marked Exhibit 153 for identification.)

1230 I have examined Exhibit 153. I never saw that letter. It is dated July 13. Before coming to the stand on my direct testimony I sought to find out the status of the companies listed in my Exhibit 148 at June 30, 1939. Answering your inquiry if I had a check made with respect to the Southern National Bank loan as of June 30, 1939, I had similar information prepared as far as we could do so as of June 30 of such of these companies as we could get information on. Mr. Timberlake had charge of it. Mr. McKenlon made the study. If there was an intimation to Southern Natural and the members of its Board of Directors at June 30, 1939, that there was a reduction in the interest rate of the bank loan contemplated, I did not know about it. As far as we could ascertain from the public records, this fact was not disclosed. It was our endeavor to get all the information possible. With respect to the status of these companies I don't know whether I instructed Mr. Timberlick to confine his investigations to the published records or whether I told him to get his information from the June 30, 1939. I am somewhat familiar with financing utility companies and business companies and corporations in general. Usually the reductions in interest rates from banks are the subject of negotiation. I do not know that this situation involving the Southern Natural was in any way unusual in that respect.

Referring to my testimony on page 5296 to the effect that in connection with this testimony we consulted with engineers as to the operating characteristics of this pipeline or similar pipelines, and to my testimony a few pages thereafter and your question as to whether all of my information was second-hand or third-hand, I don't know just what you mean by second-hand or third-hand. If you mean that if I had this knowledge myself that would be first-hand, and that if I acquired it from somebody else who had

the knowledge it would be second-hand, then it was second-hand. I certainly did not intend to testify right along, before the point was raised, in the record, as though that was first-hand information of mine. I was asked to cite the experience of the firm. I do not understand that in my discussion of the hazards of this pipeline, physical hazards and mechanical hazards, I testified right along as though that was first-hand knowledge of mine with respect to those hazards. I don't believe that I was asked if it was first-hand of my own knowledge. I certainly did not intend to imply in any way, shape, or fashion that it was my personal experience.

(Reference to transcript from another proceeding read into record by Counsel for the Commission for the purpose of impeaching the credibility of the witness struck from record on motion by company counsel. The following questions and answers were also stricken by the Examiner:

By Mr. Slaff:

Q. Now, I ask you whether in the Public Service of New Jersey case when we were discussing—you and I in the cross-examination—hourly wage rates, wage rates for different classes of workers which were obtained by you or your organization through the office of the United Engineers and Constructors, and which you had testified on the direct, whether you were not asked this question and whether you did not make this answer:

"Question (By Commissioner Reardon): According to your testimony, you don't know anything about it?

"Answer: Yes.

"Question: That is the fact, isn't it?

"Answer: Yes, that is right.

"Commissioner Bachrach: You mean the testimony today?

"Commissioner Reardon: Yes."

Do you remember that being asked you and your making those answers?

Mr. Morgan: We object to it.

The Trial Examiner: I will let it stand until I see what counsel is going to do with it. Answer the question.

The Witness: No.

By Mr. Slaff:

Q. You do not deny, of course, that that did occur? All of that colloquy did occur between Commissioner Reardon and yourself?

A. I cannot deny it.

Q. And if it appears in the record of that case, it did occur?

Mr. Culton: That is argumentative and we object to it on that ground.

The Trial Examiner: I will let him proceed.

The Witness: Yes.)

At page 5301 of the record it appears I testified with respect to various hazards, mechanical and physical hazards, of these companies. I think a fair rate of return for this company would be higher than for a telephone company. Telephone companies have some of the same kind of hazards that these companies have. I think their river crossings are more generally on bridges. I do not know how many rivers the Illinois Bell crosses throughout the State of Illinois. I do not know how many river crossings there are for telephone companies between Texas and Chicago. I know nothing specific about the danger of damage to telephone company equipment by floods. They encounter hazard from such things. Electric operating companies encounter hazards from weather conditions. The troubles they have with floods are more largely power houses located in flood districts. Some other public utilities have such hazards. I don't know specifically about the flood hazard of the Louisville Gas and Electric Company in 1937 or about the flood damage to that company in the 1937 floods. I know nothing specifically about the damage to the Cincinnati Gas and Electric in the 1937 flood. I know there was a flood down in the Ohio Valley at Cincinnati and Louisville in 1937. It was a pretty bad flood. I heard a good deal about the damage in Pittsburgh.

1231 The hazard of floods is not unique to natural gas transmission companies but is generally considered to be somewhat greater in degree. I said at page 5301 of the record that this hazard is very important because it entails a good deal of money for repair and loss of business during repair. Yes, insofar as such losses entail additions to fixed capital, those additions are entitled to enter into the rate base, and the company is entitled to a fair return thereon. Insofar as such expense is chargeable to maintenance, it is a proper charge to operating expense over and above which the company is entitled to earn a fair return. I made the statement quoted by you from page 5301 of the record concerning the other hazards applicable to the business of these two companies.

I know Percy S. Young. He is vice president in charge of finance of Public Service Corporation of New Jersey. He holds a similar position with a subsidiary of that company, Public Service Electric and Gas Company of New Jersey. He was formerly president of the American Gas Association. I have considerable confidence in Mr. Young's statements as to facts and his expressions of opinion. (Objection by Company Counsel overruled.) I was not aware of the article by Mr. Young entitled "Investment Attributes of Gas Utility Securities" presented May 15 in San Francisco at the Executive Conference of the American Gas Association, in which he discussed the merits of the modern gas range as follows: "1. Cooking. The modern gas range is a remarkable achievement. It is more efficient, excels and out-performs any of its competitors. Public acceptance has been immediate any enthusiastic. The modern gas range has placed gas in a preeminent position in household economy. During the year 1938, over 1,000,000 new gas ranges were sold." I was aware that there were large sales of gas ranges in the year 1938. I did not know that Mr. Young said that: "2. Water Heating. This field offers one of the greatest opportunities for expansion for a highly desirable log. Lower initial costs and substantial improvements in efficiencies have met customary requirements and public acceptance has followed. Sales of 47,000 water heaters in 1938 exceeded previous year's sales, while the sale of many non-gas-using major home appliances showed more decreases." I was not familiar with the facts thus summarized by Mr. Young. I did not know about the number of gas heaters that were sold in 1938, and I made no effort to find out the number sold or to compare the number sold that year with the number sold in other years. I did not know that Mr. Young in the same address went on with the summarization: "3. Refrigeration. Gas refrigerators continue their extraordinary public acceptance and relative sales results were better than other types of automatic refrigerators during 1938." I was not familiar with the fact that Mr. Young made that summarization. All I can say to that is that gas refrigeration is quite a minor portion of the gas load; and it might very well be that the percentage of increase in gas refrigeration apparatus was higher than the percentage of increase in electric refrigeration apparatus. I don't know that the absolute sales for gas refrigerators exceeded the previous year's sales, but I should think that

is reasonable. I did not know that Mr. Young had made the statement that: "4. House Heating. Faced with keen competition, gas house heating has made outstanding gains. Manufactured gas sales for residential house heating increased every year throughout the depression, and throughout 1938 were almost four times the 1929 sales. Gas house heating entrenches the other three services of cooking, water heating, and refrigeration." (Objection by Company Counsel overruled.)

Questions by the Examiner.

I am aware that gas house heating has done pretty well, but it is my opinion that it lags behind the use of oil. It is certainly true that the gas companies are faced with keen competition and that there were outstanding gains. I think it is probably true that manufactured gas sales increased through the depression for residential house heating. It is very likely that it was almost four times as much in 1938 as in 1929, but, as I said with regard to refrigeration, the house heating load was pretty small in 1929.

The principal facts on which I based my conclusion as to rate of return are first, that it is a matter of general knowledge that electric cooking is pressing on gas cooking; second, I see every three months an index of gas and electric sales in the United States, and the gas sales have been increasing very slightly while the electric sales have shown good increases. I have no further information than
1232 that I just stated, namely that the quarterly index of gas sales has increased very slowly.

Cross-Examination by Mr. Slaff Resumed.

I hardly think that the sale of gas for house heating is an item of major importance in the gas industry. It is quite an undesirable load because it comes on the peak of the other load, and that taxes not only the producing or supplying facilities but the capacities of the mains.

Mr. Walter Beckjord is vice president and general manager of Columbia Gas and Electric Company. He is the new president of the American Gas Association. The Columbia Gas and Electric System operates large natural gas properties. I am not specifically aware of the article by Mr. Beckjord in the September 14, 1939, issue of Gas Age from which you have read and in which he states the

following: "During the last 10 years the sale of gas for house heating has become an item of major importance to all branches of the industry. Always a large factor in the natural gas branch, special rates and sales activities for promoting house heating were initiated in the manufactured gas branch in 1915. In the beginning, the company growth was slow. In 1929 house heating customers in the manufactured gas branch totalled only 31,000 and consumed less than 4 percent of the total gas sales and contributed about 3 percent of the gross revenue of that branch. Nine years later, during 1938, the number of house heating customers had grown six-fold, to almost 200,000. House heating represented nearly 14 percent of the total gas sales, and house heating revenues were nearly 9 percent of the total revenues, three times the 1929 proportion. The number of customers using gas for house heating increased without exception during every year of the depression, and today more than 2,225,000 house heating customers are on our lines. There can be no question about the present and future importance of house heating to any gas company when it is realized that one-seventh of our customers are now utilizing gas for this purpose." I knew that there had been a substantial increase in house heating. I have the greatest respect for Mr. Beckjord's opinion. I would consider house heating important to the gas industry but not of major importance. As I explained, the load has some undesirable characteristics, and the fact that there was such a large increase in the volume, whereas the total sales increased so slowly would seem to indicate less load or even a loss of cooking load. I do not know that to be the fact. The fact that the companies are apparently going after the business would, up to a certain extent, indicate that it was a desirable part of their load, or that at least the desirable features outweighed in the companies' minds the undesirable features of the load. No, it would not indicate that attitude to the extent that the companies go after the load. It would be desirable to the extent of their capacity.

The house heating load has a very low load factor; and it comes on in the middle of winter when the other load is heavy. The amount that a company can take is limited by its production or supply capacity and the capacity of its system of mains. I do not think a company would go out to get business where the undesirable features outweighed the desirable features of that particular type of business.

If a particular company goes out to get house heating business, that is an indication that in its judgment the desirable features of that house heating business outweigh the undesirable features of that type of business for that company. That would apply to any company which goes out for that character of business.

I was not aware of the statement you quote from Mr. Young's article under the subcaption "Air Conditioning," in which he stated: "Air conditioning—the market for air conditioning is rapidly growing. Air conditioning equipment can be used to good advantage wherever people live, work, or play. The application of gas-operated absorption type direct dehumidification equipment as applied to the air conditioning field is making excellent progress. Air conditioning has been termed the nation's next great business. It carries a great opportunity for the gas industry." To the best of my information air conditioning by gas is insignificant at the present time. People in the public utilities business are now beginning to feel that the air conditioning market was overrated. The only practical type of gas apparatus that has been designed up to this time is something that cannot very well compete with the electric. I should say that the air conditioning market does not present a very attractive market for the future as far as the gas industry is concerned. In the present state of the art it certainly does not; and I know of no contemplated improvements or expected improvements.

1233 I am not aware that the article in the magazine Gas for August, 1939, at page 66, entitled "Gas Air Conditioning Serves Dallas Office Building," contained the statement that economy in operation of air conditioning apparatus may easily under-cost electricity as much as 75 per cent, and that gas-powered air conditioning has given a convincing demonstration of its ability through an installation in the Great National Life Building of Dallas, Texas. I am not familiar with the statement from that article, which you describe as the last statement, which (121) states: "Several other Dallas buildings have been air conditioned with natural gas power, and because of its feasibility, dependability, and economy, this fuel is expected to come into increasing demand."

I have not read the statement you quote from Mr. Young's article under the subcaption "Commercial and Industrial Use," and which was Mr. Young's final

summarization as follows: "6—Commercial and Industrial Use. The future of commercial and industrial gas sales is decidedly bright. The steadily increasing demand and acceptance of gas in this field over the past nine years when despite adverse business conditions, sales increased almost 30 per cent, indicates the commanding position attained by the industry." I think that the future of industrial sales for manufactured gas is limited and the future for sales of natural gas is limited by the supply and the price at which it can be brought to the point of sale. I should not say that the future of commercial and industrial gas sales is decidedly bright. I should say it is moderately good. It is somewhat better than it was in the early part of 1938. I would call it an upturn but not an outstanding upturn. I suppose anything in the nature of an upturn is an upturn. I hesitated to use the word definite in my first answer because it appears to imply an outstanding upturn. I think the upturn was of such character as to be significant or indicative of the future, the immediate future; even though, while my recollection is not clear, I think that the weather conditions last January were more favorable for gas sales than January a year ago. I would say that 1938 was below a normal year for the gas business. There has been a definite upturn in the first quarter of 1939; and that upturn continues.

I do not know who Mr. Paul Ryan is. I do not know that he is the chief statistician of the American Gas Association. I have seen some of the statistical bulletins of the American Gas Association, but I cannot quote from them. I doubt if I have seen the copy of one of those bulletins for the year 1938 which you have handed me. That bulletin was published in October, 1939, after I had completed the preparation of my testimony in this case. I am not familiar with the paper entitled "The Natural Gas Industry—An Expanding Service" by Paul Ryan, chief statistician of the American Gas Association, which appeared in the magazine Gas for May, 1939, and which has been reprinted from that.

(At this point counsel for the Commission handed the document just mentioned to the reporter and requested that it be marked for identification. At the direction of the Examiner it was marked Exhibit 154 for identification.)

I cannot see why that would have added to my knowledge on the subject. I know perfectly well that the natural gas

industry is expanding. I do not remember the facts about the difference in the temperature in 1938 as compared with the year 1937, but it is my impression that January, 1938, was warmer than January, 1939. According to my recollection the temperature in 1938 was about the same as in 1937. By the term "degree day" as used in the industry is meant one degree for one day below the normal temperature. That is the gas industry's standard measure of weather conditions. When I said January, 1938, was about the same as January, 1937, I was referring to temperatures in New York. I cannot say what the general condition throughout the country was.

1234 I could not have quoted the figure 5.2 per cent as representing the increase of revenues for the manufactured and natural gas utilities in May, 1939, over those of the same month of 1938, but I think that is about right. I think it would be reasonable to expect that the revenues for natural gas were up 8.4 per cent in that month in 1939 over the same month in 1938. The revenues were around 5 per cent less in 1938 than in 1937. I think you are right in stating that the revenues of the natural gas industry for the first six months of the year 1939 amounted to a gain of about 8.3 per cent over revenues for the first six months of the previous year.

Questions by the Examiner.

I said that I thought the gas sales in 1938 were on the order of 5 per cent under the sales in 1937. I had reference to the sales of both manufactured and natural gas.

Cross-Examination by Mr. Slaff Resumed.

In determining how the public appraises securities offered to the public or about to be offered to the public, one of the ways of doing it would be to consider what an investment banker, in whose judgment he has confidence, thinks about such types of securities. I know who the Mellon Securities Corporation are. I cannot say that I am very familiar with them. They are a very large investment house. I do not know who is president. I do not know who Mr. Frank R. Denton is. I never heard the name. If an article appeared in the American Gas Association Monthly for August, 1939, by Frank R. Denton and underneath his name was stated "President, Mellon Securi-

ties Corporation, Pittsburgh, Pennsylvania," I would have no doubt that Mr. Denton was president of that corporation. I am not aware of what Mr. Denton said in an article published in the American Gas Association Monthly, July-August, 1939, entitled "A Banker Analyzes Natural Gas Industry—Investment Values." I do not have a copy of that issue before me. I am not familiar with the opinions therein expressed.

It is a fact that the development and growth in use of natural gas has been enormous in the past twenty years. It is true, also, that with the increase of importance of natural gas has come a material change in the attitude of the banking and investment community toward that industry. I think, as stated in that article, that today the natural gas industry can borrow money at less cost than at any time in its history. Without checking the figures, I should think that the statement is true that during the period from 1929 down to the time of the article, July-August, 1939, the yield on bonds of some natural gas companies has been reduced twice as much as the yield on government securities. It is not the fact that the yield on some of the gas industry's securities is very comparable to that of some of the government issues, if the tax-free feature of the government bonds is considered. I must explain that I missed the word "comparable" in the question. I took the expression "very comparable" to mean somewhere near the same amount. My answer still is that the yields are not comparable.

It is true that there are some large blocks of natural gas securities held now by life insurance companies and other investors, whereas there were practically none a few years ago. It is a fact that the obligations of natural gas companies are today held in large blocks by insurance companies and other large investors, in contrast to their small investment in the securities of the natural gas industry a few years ago. That fact gives evidence of the improvement of the general credit rating of natural
1235 gas obligations. I think it is a fact that in spite of all the difficulties of the depression era, either financial or those connected with warm winters or poor business conditions, markets have been obtained by the industhy, and the industry has established itself and in the past five years has reached the highest credit standing in its history. I have never read Mr. Denton's article, to which you refer, but I acknowledge his observation that: "We

may ask ourselves what are the principal reasons for the present high credit position of the natural gas industry and what it is that makes the banker and bond buyer so willing to advance funds to this industry. I believe the answer is that, in the first place, the banker, the bond buyer, and the consumer are thoroughly convinced of the value of natural gas as a fuel." I think he is correct also in his statement: "And in the second place, they,—that is, the banker, the bond buyer, and the consumer,—are convinced that adequate gas reserves exist and are available to the companies in which they are interested, and they realize that long distance transmission of gas from these reserves to the large markets is practicable."

1236 W. C. GILMAN, a witness for defendants, recalled for cross-examination, testified as follows:

(October 24, 1939)

Cross-Examination by Mr. Booth.

I have examined my testimony on direct. There is one place in my testimony where I was reading from my note book with reference to the taxes paid by Natural Gas Pipeline Company of America. I read off a subtotal of some $600,000, whereas the actual total was nearer $1,000,000. That is the only correction I wish to make.

I stated that after I left the Massachusetts Institute of Technology, I was employed by the General Electric. I was with that company in Schenectady, New York, where I was really in the illuminating engineering laboratories with the lighting engineering design department of that company. Later I was in the New York office of the company where I was sales engineer responsible for sales of electrical apparatus manufactured by the company to public utilities and industrial corporations. This was largely primarily lighting apparatus. In the later days of my stay with the company, we handled electric apparatus generally, except things like turbines and big pieces of apparatus.

From the employment with General Electric, I went to the Central Hudson Gas & Electric Corporation as manager of a division of the commercial department of that company. I reported to the commercial manager of the

company and was in charge of the lighting division. I had a number of men who were responsible for designing lighting installations and sale of lighting installations to the customers of the company. I would not say that I had anything directly to do with the gas operations at that time; but I was on the staff of the commercial manager and attended all the meetings of the commercial department at which their program of sales with reference to both gas and electricity were discussed.

Later I was employed jointly by the Electric Bond & Share Company and the Carolina Power & Light Company in a rather general capacity, primarily in training to go abroad in the public utilities field. I never went abroad but went from that employment to the Equitable. With the latter company, my title was "Engineer, Treasurer's Office." It was my duty to make studies, investigations and reports for that company in connection with investments presently held or investments which we were contemplating making. I was the only man who was doing that kind of work for the Equitable. We had of course a railroad man. I probably had one or two clerks with me.

I could not repeat the figures as to the amounts represented by bonds, the preferred stocks, and common stocks in the total portfolio of the Equitable. I mean they were very large, running into the hundreds of millions of dollars. I can probably break down the public utilities portfolio in round numbers by saying that when I left the total holdings in public utility securities was somewhere around $300,000,000 or more, of which I estimate that the holdings of preferred stock were around $40,000,000. The difference between $40,00,000 and $300,000,000 would represent the bonds. The return earned by the Equitable
1237 on the investments in its public utility securities varied from year to year. I judge that it was between 4% and 5% the last year I was there. I can not be specific. The return in any one particular year may be influenced by write-offs or write-downs of securities during that particular year; so I think it would have to be explained that the actual return in any one year is not completely indicative of the investment results obtained during that year. If securities in the opinion of the financial committee, the executive committee and the management, were of such a character that due to conditions it was felt that it would be more conservative to write down their value on the books, it was occasionally done. It

might not suffer a capital loss eventually. I know securities for example that were written down while I was with the Equitable that have continued throughout the period to pay their regular interest.

We bought and sold many millions of dollars worth of bonds each year. We may have during the years I was there sold a few millions of bonds at a little less than they were on the books. There was only one public utility mortgage bond that actually defaulted in the interest. That was an obligation of the Seattle Gas Company. There were no debentures in the public utility field that defaulted in interest. There were defaults in bonds and debentures held in other fields, but they were not substantial. Of course there were a number of railroad defaults, as everybody knows, in that period to 1935 when I left the Equitable. We had a number of industrial debentures of which a few defaulted.

The utility investment porfolio included securities of the Associated Gas & Electric Company. Some of these investments were made before I got there and some were made afterwards as results of investigations and studies made by me. I joined in recommending their purchase. It has been a number of years since I looked at the figures, but I think that when I went with the Society they held $1,773,000 of those debentures and later acquired enough additional debentures to bring the total holding up to $5,000,000, that is the best of my recollection at this time. These debentures have never been in default.

The Society each year pays to its policy holders a dividend in varying amounts on different types of policies, retaining other earnings which go to Surplus. This is a policy holders' surplus. It is not the practice to pay out in dividends the entire return earned. It is difficult to say just whether such surplus of an insurance company is reinvested. It is different from an ordinary public utility or industrial corporation. The surplus which belonged to the policy holders mingled with the general funds of the Society and might be in cash or might be invested.

The rate of return is that per cent which applied to the fair value of the property will provide a sufficient amount to attract and induce investors to put up the necessary funds to purchase or construct the enterprise. It is not intended to provide a return of the money invested in the enterprise. I said it applies to the fair value of the property.

In making an investment, the investor feels that he will be able to convert that investment, or get his money back through holding it to the end. A rate of return must be applied to the fair value of the property. Investors realize that.

1238 I do not think a bond salesman who goes out to sell a $1,000 bond to an individual expressly tells the individual that the company is going to get a return on the fair value; but trained investors, professional investors, and institutional investors who study investments and set investment fashion know that. I don't know without making a test as to how many men of the first fifty I met in a walk down Wall Street would own securities in a public utility corporation and who would know that. When such an institution as the Equitable invests money or buys bonds of a public utility corporation, it expects the money represented by the bonds to be paid on the due date of the bonds, and it expects a return upon the principal amount represented by the bonds. The Equitable makes a dollar investment and expects dollars back.

I testified in the Brooklyn Union Gas Case as I have stated. I testified to a rate of return of not less than 7%. I think I said from 7 to 7½%, but not less than 7%. I think I said in my testimony that the capital structure of such a company as the Brooklyn Union Gas would appropriately be 50% or less in bonds and the remainder in stock.

My notion of a proper capital structure for a company such as defendants would be 50% or less in bonds and the remainder in common stock. The original capital liabilities of Natural Gas Pipeline Company of America were about $60,000,000 in bonds and $3,000,000 in stock. The unpaid bonds now amount to $44,000,000 and the remainder is represented by the common stock. Assuming that the total capital liabilities are $60,000,000, with no mention of reserve for depreciation or surplus, I should say that an appropriate capital structure would be approximately $30,000,000 in bonds and $30,000,000 of stock. I do not mean preferred stock. I do not agree with Mr. Emery's statement made yesterday than an appropriate capital structure of a company of this kind would be ½ bonds, ¼ preferred stock, and ¼ common stock.

By proper or appropriate capital structure, I mean the type of capital structure which is soundest and in the long run will provide capital at the lowest over-all cost. As-

suming that the capital liabilities are $44,000,000 in bonds and $3,000,000 in stock, I would recommend the same division. I believe that the most appropriate capital structure for an enterprise of this kind is not more and preferably less than 50% in the form of senior bond securities and 50% or more in the form of common stock. Preferably I would say 40%—between 40% and 50% should be in bonds.

In my answer I meant to imply that the form of capital structure might affect the cost of capital to the company. I think that is a financial principle. If you try to finance a public utility with 90% bonds and 10% stock, I think you would find that the cost of the capital would be somewhat different than if you financed it say through 50% bonds and 50% stock. The cost would be somewhat higher if bonds represented 90% of the capital. Understand, I am speaking of financing through sales to the general public of these securities.

The management ordinarily determines what the capital structure of a corporation shall be in the case of a non-regulated corporation. In the case of a regulated corporation, the management and the local regulatory authorities have something to say about it. Perhaps I should also include the Securities and Exchange Commission and the Federal Power Commission.

I believe that cost of capital is one of the things that might well be taken into consideration in determining the rate of return. Certain courts have said that the
1239 cost of capital is one of the elements that might appropriately be considered in determining the proper rate of return. I mean by that the cost of capital to the given company that is under consideration in a rate proceeding as well as the cost of money generally. I think that in giving consideration to the cost of capital of the company under consideration where all of the capital is outstanding in the hands of the public and where arms length bargaining has existed with reference to the placing of that capital, it is appropriate to consider whether or not it is a balanced capital structure. I have never given any thought to that, and I should hate to give any horseback opinion about it. I think the cost under a balanced capital structure should both be given consideration; but I want to make it clear that in an enterprise of this kind where all the bonds are owned by the stockholders,

it is obvious that the cost of capital does not mean anything. When I say this company, I mean the defendants. I would not know without knowing all of the facts of the particular case whether the rate of return in the case of a company which has a higher cost of money because of the failure to have a balanced or sound capital structure should be higher than that of a company with a well balanced capital structure.

I have intended to advise the Federal Power Commission as to the proper factors they should consider in arriving at a fair rate of return for defendants. My testimony represents my considered judgment on the whole problem. Going back to the former question, I think that the company which has sustained a higher cost of capital because of the failure to have a balance or sound capital structure than another company which has a sound capital structure might well be allowed a higher rate of return. I agree with the principle that the cost of capital to a company should be given consideration in arriving at a fair rate of return.

It is impossible to find the cost of money to the defendants. That factor does not mean anything. In the ordinary case of a public utility whose securities are outstanding in the hands of the public, we can find out what debt money costs them through arms length dealing; and we can find out how the public is valuing the earnings of the company. Thus we can get a measure that way of the worth of the common capital, but in an enterprise of this kind where all the bonds are held by the stockholders of the company, it is impossible to do that. We can not make the calculation and we can not find out what the cost of money was.

They have bonds outstanding carrying 6% interest. I decided that because of the fact that the bonds were held by the company's own stockholders that it was necessary for me to ignore that factor in arriving at the rate of return for this company coupled with the fact that all of the common stock is held by certain companies, and it is impossible to get any quotation on the stock, makes it impossible to find out the cost of the equity money; and therefore you can not find the cost of the total money. You can assume 6% as the cost of the bond money, but that does not mean anything here, in my opinion. I did not assume anything as the proper cost of the bond money

of these defendants. I have not made calculations as to the cost of money to this company because I can not make them.

Oh, yes, I made computations in my own mind and on paper as to how this company might be financed and considered that in arriving at my conclusion as to what was a fair rate of return. I gave that factor substantial consideration. I think this element would be included in one of the items which I outlined as the things I gave consideration to in my direct testimony. The things that I gave consideration to are scattered through the record here from the time I started to testify until I finished. It is possibly included on page 5503 in line 19. I think it would be reasonable for the Federal Power Commis-
1240 sion to draw the inference from that statement that I gave consideration to what would be a proper cost of money to this company. I think I put my calculations on paper. I have certain working papers here but I do not know whether the calculations are in there. I have as a matter of fact among my working papers a calculation which I made along that line. I have substantially everything that I used, except a lot of heavy prospectuses and things like that which I left in New York and which were difficult to carry.

In my calculation I assumed a capital structure, divided 50% bonds and 50% stock, and I assumed that the bond money could be raised at 4 to 4½%.

Referring to the statement you just read from the testimony of Dr. Dorau, at pages 5552 and 5553, to the effect that in his opinion it does not make any difference as to the rate of return to which an enterprise is entitled whether its securities be in the form of bonds, preferred stocks or common stocks or ordinary interest-bearing indebtedness like that to banks, I agree with that statement from an economic point of view. From a practical point of view, it is difficult to convince people that that is correct. I think from an economic point of view it is correct. In setting up my theoretical capital structure there, I did it in a way which I thought would provide the lowest over-all cost of capital and from that I made some checks and calculations to guide me in forming my opinion as to a proper rate of return for this company.

I think it would be appropriate for a regulatory body in determining rate of return to give consideration to the

type of capital structure of a company and whether that influenced the cost of money. I think I ought to make myself clear by saying that it is appropriate for commissions to give consideration to it because the courts have said they must, and therefore they should. From an economic point of view, I agree with Dr. Dorau's statement that it really should not make any difference whether a company is capitalized with 50% bonds and 50% stock or with 100% stock from the standpoint of justice and equity.

I do not think there is an economic definition of "rate of return" that varies from my own in terminology. I do not state that cost of capital is not a proper element to consider in arriving at rate of return.

I have stated that I agree with Dr. Dorau's testimony. I am not an economic analyst. I do not hold myself out to be such. I am an engineer primarily. I can not translate myself to that position. I have to remain in my own suit of clothes. Yes, I think the courts have said that it is appropriate in arriving at rate of return to consider the cost of money as reflected by the form of capital structure. We have to agree with the courts. I think I can agree with the courts in the principles involved in rate cases and also with Dr. Dorau.

I am not considering something which I feel as a practical matter is not a proper element to give consideration to in arriving at a rate of return, nor have I merely considered that because I felt that under the decisions I was bound to give some consideration to it. I am not fully in accord with the idea of arriving at a definite rate of return because of the capital structure. I do not know of any other factors referred to in my testimony and considered in arriving at my judgment as to a proper rate of return in which I have no confidence and which I considered because I thought I was required to consider them under the 1241 decisions.

I do not remember having been advised by counsel for the company as to what the law was on the question of rate of return. I have had conferences with counsel, but there was no discussion as to what the law was on the question of the rate of return.

My testimony dealt with the presentation of an exhibit showing the earnings of utility and industrial corporations, and then I discussed following that a number of factors which affected the risk of the natural gas industry and this company. All investments have risks in greater or less

degree. The investor is uncertain of the future, and where he sees possible dangers to an enterprise, he will demand adequate compensation before he will put his money into such an enterprise. He is primarily worried about whether he is going to get his annual return for the use of the capital and whether he is going to get his capital back when he wants it. Both of these elements are of great importance. I do not know whether it is possible to say which is greater without taking actual examples and working them out.

Obviously, if he were investing a million dollars in the bonds of a company which were going to mature 10 years from now, and the bonds were going to carry 4% interest, the total amount of interest involved is only $400,000, whereas the principal at stake is $1,000,000. The principal thing in which I would be interested in that case would be the return of the principal because it is the greater amount. The investor is also afraid that he may not get the 4% throughout the entire 10 years.

I referred, among other factors of risk, to the element of taxes. (Objection by Company Counsel overruled.) I consider that to be a serious risk for the utility industry today. I compared the risk of the natural gas industry with the risk of the electric and manufactured gas industry. I said, generally speaking, that this company has greater risks than the electric companies or other gas companies with distribution facilities. Probably this company is in better position than some electric companies. I think I made that clear in my direct testimony, that I was speaking from a general point of view. I think I very distinctly remember saying in my testimony that, of course, there may be gas pipeline companies, pure pipeline companies, that are better risks than some electric companies. I think, to make it clear, I said you might compare this company with an electric company in receivership. From such a comparison, this company is in a safer situation. That is not the only electric company that I could possibly consider to be in less favorable position than these defendants. I think these companies are in a better and stronger financial position and are perhaps less risky than some of the electric companies in the United States. I should hate to single a company out offhand without making a study.

Among the favorable things about these companies that are obvious to anybody making a study of these companies are their recent financial history, their earnings record in

the past few years, particularly the last three years or so, the ability of the companies to reduce their debt, the ability of the management of the companies to build up gas sales and load the line, the fact that the companies serve a large market and connect to the large Texas Panhandle field—these are all factors. Generally speaking, I do not think they are in a more advantageous position than electric companies. I said, generally speaking, I think electric companies are a better risk.

I think I have enumerated the important favorable
1242 facts which would be interesting to an investor in a company such as these defendants. These companies were not particularly set up for comparison alongside electric companies. It is extremely difficult, if not impossible, to do that in the way you ask it; but I simply would list a number of the favorable factors which an investor would look at and would be interested in a situation of this kind. I would have to have for consideration a specific electric company. Certainly there are things about these companies that appeal to me, looking at it from an investor's point of view. I named a number of them.

They serve indirectly Chicago and surrounding areas. Commonwealth Edison Company and subsidiaries serve the same territory with electric energy. The Peoples Gas Light & Coke Company serves the city with gas. The Illinois Bell Telephone Company is the other large utility in the city of Chicago. I know the latter company but I do not know very much about it.

I am quite familiar with the Commonwealth Edison Company and in any study I would make of any situation involving Chicago, it would be in the back of my mind. The Commonwealth Edison Company, of course, is in a very highly favorable position when compared with these companies. There are no factors of importance in its operations in which it is at a disadvantage compared with defendants, although there may be some.

The Illinois Bell Telephone Company is in a highly advantageous position compared to the Natural Gas Pipeline Company of America.

I believe The Peoples Gas Light & Coke Company is in a more advantageous position from an investor's point of view than defendants. I cannot answer a question so indefinite as your inquiry, "Are there any aspects of their operations in which they are in a worse position" than defendants.

I have stated that I considered the effect of regulation as a risk of the company in arriving at my judgment as to the proper rate of return. I do not think I considered it a very serious factor. I thought it was a factor worthy of consideration. Regulation of natural gas pipeline companies is new and unknown and investors are traditionally scary of the uncertain.

I know that the Federal Communications Act was passed a few years ago. I do not understand that the Act gives the Federal Communications Commission a new broad regulatory jurisdiction over the American Telephone and Telegraph Company. I understand it gives the Federal Communications Commission some jurisdiction over interstate telephone rates; but I did not know that it gave the Commission broad regulatory powers over that company. I do not know enough about that Act to make any comparison between its effect on the American Telephone and Telegraph Company as compared with the powers of the Federal Power Commission over the natural gas industry.

I do not know whether or not that Act increased the cost of money to American Telephone and Telegraph Company. I have studied the Federal Communications rate of return study. I know of no rate case under that Act as yet. As I said before, I do not know very much about the Act and I am not qualified to express an opinion as to whether or not it tended to increase the risk or the cost of money to the American Telephone and Telegraph Company.

1243 I know that the American Telephone and Telegraph Company and its associated companies have issued many, many millions of dollars of securities in the last few years at very low interest rates. Of course, the issuance of securities by the associated companies has nothing whatever to do with the Federal Communications Act because they are under State regulation and not under regulation of the federal authorities. The parent company has issued many millions of dollars of securities. I have not given any study to the question of whether or not that Company has been injured by the Federal Communications Act; so I do not feel that I should express any opinion.

I made, in the preparation of this case, what I considered appropriate and sufficient study, but I made no study to determinate the effect of regulatory laws upon the cost of money to utilities.

I do not consider the natural gas industry in a more

favorable position than electric companies and the electric industry with respect to the item of taxes. I never attempted to make any comparison or to set my study up that way; but if I did express an opinion, it would be that the companies which are extracting a natural resource from the ground and selling it would probably be in a more unfavorable position from a tax point of view in the future than established electric companies. It is taxation with reference to the future that I referred to. I would give the present or past tax situation the weight which I thought it should be given.

I have watched the taxes upon the natural gas industry; and I have also watched for a number of years attempts by legislators in various states to put taxes on the natural gas industry. Taxes on all the utility companies have shown an upward trend during the past few years. I would say that the burden on the natural gas industry is not substantially different from that on the manufactured gas industry. That is the way I looked at it when I made my study of the rate of return for defendant companies, to which I have testified. I would say it is not greatly different today; but I was trying to look to the future; and in looking to the future, I have a very distinct opinion of the possibility of future taxation on natural gas, and I think it is a hazard which is important.

As I have stated, I do not think the tax burden upon the natural gas industry is greatly different from that upon the electric industry, the telephone industry, and the other utilities. I have not made a calculation other than federal income taxes. They are taxes and, of course, I always include them as taxes.

The total taxes, exclusive of federal income and excess profits and undistributed profits, in the year 1938 for Natural Gas Pipeline Company of America were $325,000. The Texoma taxes were $168,000. The total taxes of both companies were approximately half a million dollars. The total revenues of the companies were around $14,000,000. The taxes were approximately 3% of the total revenues exclusive of Federal income taxes.

I am familiar with Poor's Public Utility Manual. It is recognized as an authoritative statistical source for data concerning the operation of public utilities. Beginning on page 1266, there is a report on the Commonwealth Edison Company. (Objection by Company Counsel overruled.) On page 1276 is shown the consolidated income account for

the years ending December 31st of that company. Total operating revenue of that company for 1938 was $139,000,000. The taxes, other than federal income taxes, for the same year amounted to $19,115,442. That is about 14% of the total revenue.

1244 J. A. EMERY, a witness for the defendants, recalled for cross-examination, testified as follows:

(October 25, 1939)

Cross-Examination by Mr. Slaff.

I have gone over my Exhibit 148 between the time I testified on direct examination and the time I appeared for cross-examination. I have gone over Exhibit 149 which is the comparison of earnings according to my methods of comparison.

I have found no errors in Exhibit 148. With regard to that exhibit, I testified that it covered all the natural gas companies for which I could get prices on all the securities. I have since found that the Pacific Lighting Company, which is in the neighborhood of Los Angeles, disposed of its electric properties in 1938, so that its business now consists of gas transmission and distribution properties. The average rate of return on that property, computed in the same manner as on the other properties in Exhibit 148, amounted to 7.16%.

With regard to Exhibit 149, I have had a check of the figures made and I have also had made a computation of the cost at the time of construction of those elements of the construction that would vary from the present line if conventional practices had been followed. This is not a correction, but I carried the exhibit further than I originally had it to answer the question which the Examiner propounded to me at the time.

Now, I find an error in the estimate of the operating expenses in the particular of the operating expenses of the Fritch station, so that the total estimated operating expenses becomes instead of $3,501,974, $3,427,597. The net effect of that is to increase the earnings shown on the line at lower pressure, both by that particular and by reducing taxes.

The total increase in earnings of the line operated at

lower pressure shown in my Exhibit 149, after taxes, is $61,600, bringing the total earnings of the line operated with lower pressure, according to my exhibit, up to $9,172,828. This reduces the earnings due to higher stresses. I knew about these errors before I got on the stand on Monday. I did not call them to the attention of the Examiner then or to the attention of counsel because I fully expected them to be presented either in redirect testimony or to come out in this testimony.

I did not feel any obligation upon myself to call to the attention of this Commission the fact that there were errors in my exhibits which I knew about at that time or at this time. (References to the testimony of the witness in a proceeding before the New Jersey Commission wherein the witness admitted the errors of 1¼ million dollars in his exhibit which were not called to the attention of the New Jersey Commission until brought out on cross-examination were stated by the witness to be correct).

Every now and then I see the publication of the New York Press Company, called "The Index." I did not see the autumn issue containing an article on the gas industry.

I remember the testimony which you now read from pages 5303 and 5304 of the record in which I stated that it was my view that investors in natural gas securities have taken cognizance of the special risks which I have discussed here as applying to natural gas pipelines in general, and that is reflected in the market prices for natural gas securities.

I think I must have discussed with some of the investors in this company the cognizance that they took of the so-called special hazards confronting this company, but I do not recall it specifically. I had some conversation with
1245 Mr. Gallagher one day about the whole subject; and that may have been brought up. I do not remember that it was. Mr. Gallagher is a high official of the Standard Oil Company of New Jersey, in general charge of their natural gas properties. I am referring to Ralph W. Gallagher.

The conversation I mention took place in the summer of 1934. That is the last time and the only time I can recollect that I have discussed with any of the investors in this company or those responsible for the investment in this company the cognizance, if any, that they took of the so-called special hazards, if we except Mr. Floyd C. Brown as a representative of one of the investors. I do not un-

derstand that Mr. Brown was in any way responsible for making the decision to put the money of Cities Service into this investment. Of course he was responsible for presenting the facts of the situation. On the basis of the facts which he presented which had been worked up by him and the staff working under his direction, a decision was reached by the Cities Service organization as to the making of this investment.

I have no knowledge at this time of the cognizance of any of the so-called special hazards confronting this company taken by any of the investors in this company, unless it was the general conversation that I heard about this line at the time of projection.

Our office was trying to obtain a position in the matter; and there was a great deal of talk made from time to time about it in the office.

In the preparation for my testimony in this case, I did not discuss with any representative of the Standard Oil Company of New Jersey responsible for Standard's investment in this company, what cognizance they had taken of the so-called special risks of this company. I talked to Mr. Lerch of that company but not on this subject.

Exhibit 148, which I presented here contained a list of eleven companies. If I were going to prepare a statement now under the same specifications, there would be twelve companies as I have already stated. I do not consider this a narrow list of companies. This is data that was prepared in 1938. It did eliminate the public appraisal of the securities of one type and another of various other natural gas companies. I do not know how many other natural gas companies have securities in the hands of the public. I would say though that it probably would not be much more than this number, of any size. I did not make a study to find out the facts on that point.

I made a study in preparation for my 1938 testimony in an attempt to bring down to date my Exhibit 49 in the Chicago District case. I think in that study, I procured a list of all the natural gas bonds that were outstanding in the hands of the public. This data contained a list of companies engaged in either production or transmission, or both, and there were 19 companies with 30 bond issues. There were 9 companies engaged in transmission and distribution, but I do not have the number of issues involved. I mean I do not have the information available here and I do not remember any effort to determine it.

As I testified before, I endeavored to determine the rate of return that is proper for this company by one of the methods used in 1934. That was the first method, where I determined the average yield on natural gas bonds and applied to that ratios of yield on preferred stock and common stock as determined from public utility com-
1246 panies, and ratios of bonds, preferred stocks, and common stocks in volumes to the total investment in certain representative public utility companies.

We did not exactly bring the 1934 study down to date in order to prepare this Exhibit 148. We made a study, though, based on that method. By consulting it, I can tell you specifically if it was brought down to date. I started a new study in 1938, and it was not a matter of bringing down to date Exhibit 49 in the Chicago case. We simply employed one of the methods employed in the study of 1934.

I would like to say by way of explanation that the study in question was not brought to a conclusion and not checked in 1938—I mean the computation following as nearly as we could the lines of the 1934 study. The method I used in 1938 is similar to the method embodied in Exhibit 49 in the Chicago District case in 1934.

Going back to Exhibit 148, I did not use the Pennsylvania Gas Company figures for any purpose except as they were included in the figures for National Fuel, of which the Pennsylvania Gas Company is a subsidiary.

Of the ten other companies there shown, none, except the Lone Star Gas Company, has a capital as large as that of this company. Seven of those companies have less than 50% as high a capital. Of these 7, 2 have only about 20% as much capital as defendants. One of these two has a capital of about 10% and the other a capital of about 5% of the capital of defendants.

I do not think it makes a great deal of difference that the capital of the companies contained in this list may be only 5% of that of defendants. Size is of importance in these particulars,—first, there is a difference between a company not large enough to command good talent and a company which is large enough to do so; secondly, when the company's securities are distributed, a larger company is naturally better known, and, other things being equal, has a better market or broader market.

I do not think the same answer would apply to a comparison between this company and a company with any

lesser amount of capital than defendants. I think when a company has an investment in the millions it is in position to command good talent, other things being equal.

I think a risk in an investment depends on size only to the extent that I have testified. I think as long as the size of the companies that I have used runs into the millions is sufficient to command good management, size has little, if any, bearing on risk, except as size means more hazards. I should say that a company with 2 or 3 million dollars of capital is in position to command satisfactory talent. I think a company with 2 or 3 million dollars of capital can command the same degree, proportionate to the magnitude of the job, of executive ability and talent in its management that a company with $50,000,000 of capital can. The talent in an absolute sense may be of lesser quality, but it manifestly requires a man of less calibre to operate a small property than a large one, that is, a man of less calibre might be fully as efficient an operator of a small property.

I do not think that an investor, judging the management of two companies and coming to the conclusion that
1247 the management of the company with the smaller capital has less talent, would consider that as an added risk in the smaller company, unless it were less in proportion to the job. I said that companies under a few million dollars of capitalization cannot command the executive and managerial talent that companies with 50 million dollars of capital can. I am not able to draw an exact line between the size of a company that can command good talent and one which could not command proportionately as good talent. In the case of a company of $2,000,000 capital with no outstanding problems, I think it could command as good talent proportionately as a company with $50,000,000. The same degree of management would apply in proportion to the size of the job, that is, the magnitude of the problems and the quantity of the problems.

Ordinarily, a company with $2,000,000 of capital could not command the same skill and managerial and executive ability as one of $50,000,000 of capital. The larger company can command men of higher calibre than the smaller company. In days past in some industries, there might have been an advantage from an investor's point of view in a larger company due to its ability to pursue research. Now, however, I think that the general research facilities are such that a smaller company can avail itself of them. From that standpoint there would be no present advantage.

My answer, therefore, is that there is no advantage for the reasons I have just stated.

In preparing Exhibit 148, we used only those companies all of whose securities were dealt with in the year 1938. In most instances these dealings were with the public. Our criterion was that where there were records on market prices, we used the company in that exhibit.

On page 3 of the exhibit appears a note with respect to the El Paso Natural Gas Company, that is note B page 3 of Exhibit 148. The note might read "no market quotation; sold privately in 1938 at the price shown." That sale was made privately at the price shown. We tried to find all of the records we could of transactions in these stocks and bonds. We didn't get a market quotation for the El Paso Natural Gas Company for first mortgage bonds for the year 1938. That is a sale and not a market quotation. The same applies, as shown in Exhibit 148 at page 11, to the cumulative preferred stock of Kansas Pipeline and Gas Company except that the note might read: "Offered price as of March 1938, no sales price," instead of "no market quotation."

As explained, with respect to the common stock of that company, we did not get any market quotations. The price was obtained from a Securities and Exchange Commission document—I do not remember whether it was a registration statement or what. I think it was a registration statement. My instructions to my staff were to try to get a market quotation other than that statement from the Securities and Exchange Commission source and I was informed that they made that effort, and therefore had to fall back on this source.

With respect to the bank loans set out in that exhibit, there were of course no market transactions in the sense that that term is ordinarily used.

By the language you quote from page 5305, near the bottom, to the effect, that the fact that a transmission line owns a distributing company and is not one standing on its own bottom is a circumstance which enters into the risks involved in the securities or capital investment and that the ownership of a distribution system which buys from the pipeline insures to the pipeline the control of the market and adds to the total investment a proportion of lower risk property, I meant that all the investment in defendants except such as may be salvaged will be lost when the Texas Panhandle Field has been exhausted unless some

new fields are discovered in sufficient proximity to the line. If such new field were discovered in sufficient proximity to the line, that would tend to reduce the hazard and the risk to the investor.

1248 In arriving at my conclusions as to rate of return, I assumed that there was a reasonable possibility that defendants' life would extend beyond the life of the Texas Panhandle field only insofar as I have compared this company with other natural gas production and transmission companies which have similar possibilities. There is the same possibility with respect to any of these companies listed in Exhibit 148.

By my last answer, I meant to imply that I did not give any particular consideration to the possibility that defendants as a going concern might continue operations beyond the date of the exhaustion of the reserves in the Panhandle. If I may summarize, I based my opinion on the actual effect of such a possibility on the securities of these 11 companies; and I did not make any increase based on that comparison for any additional hazard in the case of this company.

In other words, I did not assume that defendants had any less possibility of such a circumstance than those other companies listed in my exhibit. I do not think the consideration of the possible future life of this property entered into my judgment as to what was a fair rate of return except that I satisfied myself that these other companies generally have a longer expectancy than this company. I cannot give any more categorical answer to your question than that I just gave.

I read the testimony of Mr. Floyd C. Brown. I knew it was the opinion of Mr. Brown and some of the other witnesses that the field would be exhausted in 16 years, and I also knew that it was their opinion that they would go out of business when that field was exhausted. (Company counsel object to the question by Commission counsel; "Did you differ from that opinion or do you now differ from that opinion?" whereupon the witness conferred with his assistant, Mr. Timberlake. Commission counsel objected to the witness conferring with his assistant at a time when counsel for the company is making an objection to a question still unanswered. After colloquy of counsel the witness was permitted to state what Mr. Timberlake had told him as follows: "The Witness: He suggested to me that in the case of future field discoveries, there would be additional

investment involved." Whereupon Commission counsel stated to the Examiner that in view of the statement the consultation was improper.)

In considering the rate of return, my conclusion was not affected at all by my opinion that the investment might have a certain safeguard due to the fact that the life of the company might extend beyond the date of exhaustion of the Panhandle reserves. It did go through my mind in considering the expectancy of this company with the expectancy of the other companies, but I considered it only to the extent that I have already stated.

I did not take into consideration the possibility that this company might continue in business beyond the time testified to by the company's witnesses, to wit, December 1954.

I have stated in my direct examination that I was testifying on the subject of rate of return on the assumption that from other evidence the Examiner and Commission would arrive at the probable life of the project. If the life of the project were estimated to extend substantially beyond the life of the Panhandle field on a sound basis with due regard, as Mr. Timberlake has just reminded me, to the investment required, and if such a total estimated life exceeded the general expectancy of these other companies, I would have taken it into consideration.

In my testimony, I accepted the expectancy of this company as testified to. Neither my staff nor I made any independent determination or attempted to make any independent determination as to whether the life of this company might extend beyond December, 1954. I think I have made no other studies in connection with my testimony before the Federal Power Commission except that reflected by Exhibit 148, going to the subject of the public appraisal of natural gas company securities. My recollection is quite clear that we did not make any trial studies of any nature involving any different method or any variation of the method shown in Exhibit 148.

We decided to go out and get the companies whose
1249 securities were in the hands of the public or were dealt with publicly, get the results as they might appear from the application of the method contained in Exhibit 148, and that was all we were going to do along that line. We were not making any other studies of public appraisal of securities of natural gas companies in connection with my testimony in this case. Now that I think of it, I think we did prepare some diagrams of comparative yields of

natural gas bonds and other bonds; but they were not embodied in our conclusions. These studies were somewhat similar to the graph contained in Mr. Delafield's Exhibit 147.

I do not consider that the method I employed in Exhibit 148 was taking two days' appraisal by the public. I consider that taking and covering a whole year. We took the highest price and the lowest price paid during the year. We have no data showing the number of days that the lowest price or highest price obtained during the year continued, but we have some information on monthly quotations. The average of the highest price and the lowest price does not represent the weighted average price of all sales for the year, but it represents the high price and the low price from which I have derived the average. The only complete weighting would be the multiplication and averaging of each sale by the price. Prices would naturally be affected by the market conditions and demand and supply.

The market price would take into account the faith that the public has in the management of the company. I have made no attempt to appraise the management of this company in comparison with the management of any other companies set out in my Exhibit 148, except in a general way, such as I could do by the examination of their reported results and discussion with Mr. Hill and Mr. Von Puhl of our office. This company is considered by me to have an excellent management. The other companies in this list have excellent management generally, but I have heard criticisms of some of them. In other words, the hazards of management are less as far as defendants are concerned than they are as to some of the other companies contained in Exhibit 148. On that basis, the wise investor would be willing to pay on a higher basis for the securities of defendants, which means that he would demand a lesser return than in the case of some of those companies.

If a company be over-capitalized with respect to its earnings, that circumstance would affect the public's appraisal of the value of its securities. The general aspects of capitalization would be taken into consideration by the public in appraising the comparative advantages or disadvantages of such companies as investments. If the company has no bonds and nothing but one issue of stock, there would be one condition; if a company has a very large issue of bonds comparatively, that would be another condition.

Before lunch, I agreed with you that the capitalization

of a company would have an effect on the evaluation of its securities by the investor. I would say that a soundly capitalized company has less risk attached to an investment in it than an unsoundly capitalized company. There are degrees of soundness of capitalization. If two companies be soundly capitalized, but one is more soundly capitalized than the other, the one with the sounder capitalization presents less of a risk or hazard to the investor than the other, all other factors being equal. I think it follows then that the required rate of return for the company which is more soundly capitalized of the two would be less than the required rate of return for the other company. In a general way, I made a comparison as 1250 to the relative soundness of the capitalization of defendants as compared with the companies set out in Exhibit 148. It seems to me that in effect the capitalization of defendants comes nearer to that of the Interstate Natural Gas Company than any other because the bonds and stocks are owned by practically identical interests and are not distributed. I made this comparison as to the relative soundness of the capital structure of defendants and these other companies: I ascertained the capital structure of each of them; and as I say, I consider that of this company to be more like that of the Interstate Natural Gas Company than any of the others.

I compared the soundness of the capitalization of defendants with the soundness of the capitalization of the El Paso Natural Gas Company. I think the capitalization of the latter is sound. As to whether or not it is sounder than that of defendants, I find difficulty in answering the question in that capitalization of defendants is largely academic. It is practically all held by a few interests. It is not traded in on the market. There is no basis of comparison of the capital structure of the defendants and the companies set out in Exhibit 148 as to degree of soundness. If the capital structure of defendants is sound, I think risk due to the particular capital structure would not make a large difference in the rate of return. There might be some small difference depending upon the difference in volume, the relative volume of debt. If a company were unsound, an investor would require a higher rate of return to put his money into it than if it were sound. I am unable to go any further than that, as to what amount it should be, or what proportion.

I do not understand that rates of return are fixed by commissions with any regard to the capital structure. By that I

mean that rate payers are not required to pay different rates because of over-capitalization or under-capitalization, from the standpoint of the securities issued. That was my judgment in determining the fair rate of return for defendants.

I think there might be a slight difference in the rates of return required as between two companies with different degrees of soundness of capitalization. If the differences in capitalization and the risks due thereto were large, the capitalization naturally would be unsound.

I am not able to answer your question as to whether or not there might well be a large difference in the rate of return, which would be required by the investor about to make an investment, based on the difference in the soundness of capitalization, because I do not think the difference in risks could be large as between sound companies. Contrasting a sound company with an unsound company, it would take a higher rate of return on what he pays for the securities to induce an investor to put his money in an unsound company. My estimate of fair rate of return is based primarily on the rate of return that has been demanded by these investors in these companies. In arriving at my final judgment figure of between 9 and 10 per cent, I came to that conclusion based primarily upon my judgment of the return that would be demanded by an investor in this enterprise. I might add to that the reward which I think the company is entitled to for its enterprise.

The general run of investors, I think, satisfy themselves that proper charges are being made for depreciation or amortization purposes. The primary interest of the investor, after that in the soundness of the company, is the earnings; and he will naturally see whether the earnings are stated to be adequate after adequate charges have been made. What actual earnings are depends upon whether
1251 a proper charge has been made for depreciation. In other words, I think if a company makes inadequate provision for depreciation, its earnings or its dividends represent in part capital rather than earnings. The earnings showing would naturally be based on the allowance made for depreciation. If the investor knew that proper allowances for depreciation had not been made, he would naturally pay less for the stock. The skilled investor would make an attempt to determine whether proper or improper provision had been made for depreciation. The making by the company involved of a proper or improper provision

for depreciation probably would affect the market price of the security one way or the other, if there were any palpable overcharge or undercharge for depreciation. Whether or not proper provision has been made for depreciation would affect the attitude of the investor. If there were such a palpable over-charge or under-charge for depreciation, it would undoubtedly affect the market price of the security if it were known to the investor. I think it would be known to the skilled investor if there were a palpable overcharge or undercharge in the depreciation account. Such a palpable overcharge or undercharge in the depreciation account would affect the market price of the securities.

I ascertained the charges that were made by Interstate Natural Gas Company for depreciation and looked them over generally to form a general opinion regarding them. That applies also to each of the companies set out in Exhibit 148. I made no specific study of the properties and I arrived at no specific judgment on the proper amount of depreciation to be charged by each company in the year 1938.

If it be assumed that Interstate made an inadequate provision for depreciation to the extent of $1,000,000 last year, the actual earnings of Interstate would have been approximately ½ of what they are shown to be in Exhibit 148, and the return to the investor, under these circumstances, would then have been an average of approximately 5% instead of 10% if he had paid the same price for the stock. That same principle applies to all the companies shown in this exhibit

The price of a specific security might be affected at any given time by the desire or the necessity of a large holder of that security to sell that security rapidly. Such a situation would tend to depress the price of the stock or the security. I made no definite attempt to ascertain what factors, if any, affected the market at the time of the low price or the high price of each security set out in Exhibit 148.

I do not remember that this morning we discussed the possibility of a poor or inefficient management of a company as a hazard. I do not know how to answer that question. An investor contemplating an investment in a company considers the type of management that the company has. If he is considering two companies and he comes to the conclusion that Company A has a better management than Company B, all other factors being equal, there would be less risk in investment in Company A than in Company B.

1252 W. C. GILMAN, a witness for defendants, recalled for further cross-examination, testified:

Cross-Examination by Mr. Booth.

(October 25, 1939.)

I have made the calculations concerning Commonwealth Edison Company, Peoples Gas Light and Coke Company, Illinois Bell Telephone Company and American Telephone and Telegraph Company, which you requested at the time I left the stand before. I made them from the figures contained in Moody's Manual, which is considered an equal authority to Poor's. Moody's was the only manual that was available to me. I was able to find the total taxes and the total taxes excluding Federal income taxes.

For the Peoples Gas Light and Coke Company, the gross operating revenues in 1938 were $41,390,178. The total taxes were $4,679,619. The total taxes, excluding Federal income taxes, were $3,913,917, or 9.46 per cent of the total revenues. The gross operating revenues of the Illinois Bell Telephone Company for the same year were $87,186,670. The total taxes, excluding Federal income amounted to $10,283,114, or 11.79 per cent of the gross operating revenue. For the American Telephone and Telegraph Company and subsidiaries consolidated, the gross operating revenue was $1,052,657,832. The total taxes, excluding Federal income taxes, amounted to $111,067,572, or 10.55 per cent of the gross revenues. The figures I gave for Natural Gas Pipeline Company were for all taxes excluding Federal income taxes. These figures contain the social security taxes. From reference to Poor's Manual, I find that the amount stated for Illinois Bell Telephone Company did not include social security taxes. The amount of social security taxes for that company in 1938 was $1,516,991. The total taxes of that company, therefore, exclusive of Federal income taxes, amounted to about $11,800,000, or 13.5 per cent of the total revenues. The taxes of defendants, exclusive of Federal income taxes, I have stated amounted to about 3 per cent of the gross revenues for 1938. They were not greatly different in the years 1936 and 1937.

The Plant and Equipment Account of defendants shows approximately $59,000,000 as the total investment in tangi-

ble property. The total taxes paid by defendants in 1938 amounted to approximately .8 of 1 per cent of the amount reflected by the Plant and Equipment Account. The percentage for the years 1936 and 1937 would be approximately the same.

The tangible properties were carried in the Plant Account of Commonwealth Edison Company for 1938 at approximately $380,000,000, and the intangibles at $6,000,000. Excluding Federal income and Federal surtax on undistributed income, the taxes were $13,740,000, or 3.56 per cent of the total property including intangibles reflected by the Plant Account. If the intangibles be excluded, the per cent is 3.62.

From my general knowledge of these publications, they would be reported figures of the company to this statistical organization and would generally correspond to the figures contained in the company's annual reports to its different security holders.

According to Poor's Manual, the investment figure in tangible property for Peoples Gas Light and Coke Company for December 31, 1938, was $115,892,882, with an additional item of $6,195,864 carried as "office building
1253 and other non-utility plants". There is also another item for intangible property amounting to $23,609,442, making a total of $145,000,000. The percentage relationship between the taxes and that total is 2.7 per cent. Natural Gas Pipeline Company of America is apparently not referred to in Poor's Manual. That manual ordinarily includes only those companies whose stocks or securities are held by the general public. I am not sure of that last statement but I know that the statistics and financial statements of the company are included in other public utility manuals.

I made the statement you read from page 5488 of the record to the effect that during the last 10 years or so, the public utility companies as a class, electric and gas utilities, have certainly had to stand their share, or more than their own share, of the special taxation to meet budget deficits. I think that observation applies to natural gas companies, but I do not think it applies to quite the same extent that it does to certain electric and gas companies, particularly as we all know in the metropolitan areas where large special taxes have been put on to the local utility companies to finance unemployment relief. Such special taxes have been levied by the State of Illinois and in Chicago. These

Illinois and Chicago taxes do not apply to the Natural Gas Pipeline Company of America. I am not sure of this statement, but that is my impression. I did not know as to this when I prepared my testimony.

I have said that the statement you read to me does not apply to natural gas pipeline companies to the same degree that it does to the old established gas and electric utilities which operate in the large cities, and also in the smaller cities where the tax burdens have risen and utilities have been forced to assume their share. It does not apply to defendants to the same extent. The record shows that the tax burdens on defendant companies have been increasing, but I do not think they have been increasing to the same extent as say the taxes on the Consolidated Edison for the last ten years. I have not made a direct comparison, but Consolidated Edison is one of the outstanding utility companies in the country. In the past defendants have been in a more fortunate and advantageous position from the standpoint of taxes than have the electric and gas operating companies in the same area.

I did not say last night that the burden of taxes applied equally to both the electric and gas operating and the natural gas industry, as well as defendants. I think in your questioning about the tax burden, you asked me about the tax burden of Natural Gas Pipeline Company of America in comparison with electric and gas utilities and I said it was not greatly different. That is still my opinion.

There are many different ways of calculating taxes. You have asked me to calculate some taxes as a percent of gross operating revenue, of gross property account. Taxes might be calculated as a percent of net income just as properly. I don't think I ever made any calculations other than the mental calculations one would make by looking at the taxes and the income account and looking at those taxes in relation to the whole income account. I cannot remember ever having made any calculations of taxes in relation to the gross operating revenue or total plant and property account, or net income.

The basis of comparing taxes to gross revenues or investments is one way of determining whether or not the burden of taxes is equally heavy on defendants and other large utilities serving the same year. It is just one way of
1254 calculating or getting the relative magnitude of the taxes when you are comparing a number of enter-

prises. What I am trying to say is, that there is not any one special scheme of doing it that has any particular validity over any other.

I do not agree with you that the risk to the investor, insofar as the element of taxes is concerned, is less in the case of these companies because they are in a more advantageous position than the large operating companies that serve the metropolitan area of Chicago. I would say exactly the reverse is true. These companies that are presently taxed heavily—the investor knows about what these taxes are today. The investor is not particularly disturbed by what he knows. The uncertainty is what worries the investor; and if those companies are starting out with a low tax now, they are perhaps all the more susceptible to taking on an additional burden of taxation. Defendants' past operations indicate that they have been in a distinctly advantageous position with respect to the payment of taxes as compared with the other utilities operating in Chicago and surrounding territory. These companies have paid very considerably less in taxes as a percent of the gross operating revenue or as a percent of the total Plant and Property Account than the utilities we have been discussing. I think you selected the three companies which are outstanding taxpayers. They are three of the large outstanding utilities which serve the same territory as defendants; but it is also true that there are many utility companies, I would say a substantial number of utility companies in the United States who, in 1938, paid less in taxes of the percent of the gross operating revenue than defendants.

I cannot pick companies that are operating in the same territory as defendants because you listed most of them; but among the companies operating in the territory through which defendants' pipeline runs, I know there are a number of companies which pay less proportionately than do defendants. The revenues of defendants are derived very largely from the Chicago metropolitan area.

As I remember it, I gave among the risks that investors would look at, the possibility of increased taxes. The fact that these companies' taxes are low now makes them more susceptible to increased taxes. I never have said the lower the taxes, the higher the risk, or because they had low taxes there was any special risk. I said that the possibility of increased taxes was a very definite risk, and the fact that the taxes were at a low level now made them particularly

good prospects for the taxing authorities who were short of money. Yes, I think I will subscribe to the statement that the lower the taxes the higher the risk. And for that particular factor, the higher the taxes the lower the risk.

I don't know whether I can translate that observation you make that defendants should be allowed a higher rate of return than they would be three years from now, if in fact their taxes are increased. I intended my testimony to be applied specifically by the Federal Power Commission in determining the rate of return of defendants. I will say it this way, that of two companies, one of which was now paying 15 percent of gross operating revenues in taxes, and the other was paying .1 of 1 percent of the gross revenues in the form of taxes, the risk that would be facing an investor would be substantially greater in the case of the latter because of the possibility of a large increase in the taxation of that company. I would say that the Federal Power Commission has to, in determining the rate of return, provide what investors demand, otherwise the enterprise will decay.

1255 If the Federal Power Commission were confronted with two companies, one serving the City of Chicago, whose taxes we will say were 10 per cent of gross revenues, and another company serving the City of New York, whose taxes were 1 per cent of gross revenues, all other factors being equal, a higher rate of return should be allowed to the company serving the City of New York because of the greater risk of increased taxes.

I appraised the various risks referred to in my testimony to determine whether or not in fact they appear to be real substantial risks of these companies. I would not have mentioned any risk unless I thought it was real.

Yes, I understand there are taxes under consideration applicable to the Natural Gas Pipeline Company of America. I understand that the Texas Legislature is now being called into session to consider the possibility of putting a tax on natural gas produced in the State of Texas. Texoma has been operating in Texas about 8 years. They have had no substantial taxes of that character placed upon them as yet. Down to the present, no substantial taxes of that character have been placed on Natural Gas Pipeline Company.

I know that the operations of the latter are of interstate character but Texoma is a producing company. I will assume that the State of Illinois could not levy a tax upon the natural gas that defendants sell. I think I know gen-

erally as anybody would who has been in the investment field that the natural gas pipeline companies have for many years claimed that they were an interstate proposition and were not subject to local taxation or control. That does not tend to reduce the risk of taxes, as I understand it. These companies are taxed in the states through which they operate. The fact that defendants are engaged in interstate operations tends to reduce the likelihood of gross levy taxes or taxes of that kind; but I do not think it is fair to end it up that way, because this company is paying ad valorem taxes and other taxes in the states in which it operates. They are not paying as much as a comparable utility might, although as I have said there are some utilities who pay less.

I spoke about miner groups who are anxious to see natural gas taxed. These miner groups are not in Texas because there is not much coal mined in Texas. They are in Illinois. I am not sure but what political action in Illinois which might put a tax on natural gas at the point of sale would remove natural gas from the competitive fuel field. I have agreed with you that a gross receipts tax would not apply to defendants, but the gross receipts tax might apply to the Chicago District Pipeline Company. (Motion by Commission Counsel to strike latter portion of answer denied.) I know that the State of Illinois has a public utility tax of 3% or some such amount, an unemployment relief tax applicable to all utilities. I am not sure of the amount. I don't know whether Natural Gas Pipeline Company pays that tax or not.

I have a detailed breakdown of the taxes. There is no special listing for the State of Illinois unemployment tax, so I assume no such tax is paid. There is listed in Illinois only ad valorem tax. I made an investigation of taxes and tax burdens of these companies before testifying in this case. I don't carry all of those things in my mind. Assuming that the unemployment relief tax is 3 per cent of the gross revenues, the amount of that tax would be about $420,000 on 1938 revenues. I do not know that it is not paid by this company. I have here a very detailed breakdown of taxes which I requested from the company, and 1256 I talked with the company officials about the taxes. I made no independent investigation other than talking to company officials and requesting detailed breakdowns of taxes paid. I know that in the past years the burden of taxes upon defendants was substantially less than the bur-

dens upon other utilities operating in the same area. I did not refer to it in my testimony. I did not state specifically that one of the substantial risks of defendants was the factor of taxes, but did state that the possibility of increased taxes was a substantial factor. I certainly took into consideration the past taxes and operating expenses of the company; and I gave consideration also to the possibility of increased taxes.

(October 26, 1939.)

(Examiner strikes from the record all references to the impeaching testimony of Mr. Emery from a proceeding before the New Jersey Public Service Commission over objection by Commission counsel. The Examiner refuses Commission counsel opportunity to state his position as to the Examiner's ruling and the Examiner refuses to reconsider his ruling.)

I said certainly that the exhibit which I introduced, or certain parts of the exhibit to a greater or lesser degree, did influence me in forming my opinion as to a proper rate of return for defendants.

The language you have read from the record, beginning at the bottom of page 5461, is my testimony. In that testimony and from that point on to the conclusion of my direct testimony I dealt with the factors of risk as I considered them in arriving at my judgment on the rate of return for these companies.

I think I did attempt to outline the principal risks which I felt were inherent in the situation of defendants, and to which I have given consideration in forming an opinion as to the rate of return. Risks are unfavorable elements from an investor's point of view. I believe this business has some characteristics which are more favorable, from an investor's point of view, than the characteristics of some other businesses. I did not consider only the unfavorable characteristics.

Starting at page 5491, and probably before that—I just turned to that page here—the question presented to me with reference to which I stated the rate of return, was whether I took into account my knowledge of the facts concerning the nature and extent and the character of the investments of these pipelines. Certainly, in that consideration I took into account the pipeline itself, where it ran from, where it ran to, the fact that it sold its gas through contracts, the financial history of the company, and such matters as that.

The matters to which you refer namely, favorable characteristics stated by me in my testimony, are inherent in my testimony. I do not think I have in my direct testimony set out all the facts with respect to revenues and sales of this company. I said I took the company as I found it. I would have to read the record in order to be able to refer specifically to any statement, set forth in my direct testimony, referring to any of the favorable aspects of defendants.

Yes, I testified that, "The natural gas pipeline and production industry is a more risky industry from an investor's point of view than the electric industry." I also testified: "I must speak generally; there may be some small or medium sized or even large sized natural gas pipeline which is in a particular case better than some electric company which happens to be in receivership at the time. I am simply emphasizing that I am speaking generally, and I say that generally the electric industry is a much safer industry from an investor's point of view than the natural gas industry."

1257 I find it very difficult to select one natural gas pipeline company and select the characteristics of that company which are in as favorable a position as the electric industry covering a country like the United States. I suppose there are some things that are common to the electric industry and to companies such as natural gas pipeline companies. Speaking generally, the electric industry has some characteristics which make for investor safety. The facts, generally speaking, are that the electric companies control the distribution, control the sale of the product right down to the customer's meter. Generally speaking, I can not think of any risks of the electric industry which do not also affect the operations of defendants.

I assume I felt the same way at the time I testified on direct examination. I do not remember that particular question. Whether that ran through my mind, I am not sure. You asked me whether or not I know of any risks affecting the electric industry which do not affect these companies. That is a very difficult question to answer. The electric industry covers the whole United States. There are certain portions of the United States adjacent to areas where Federal projects have been built or perhaps are contemplated, where I would have to say, thinking the thing over, that those companies in that area probably did suffer risks, or have risks inherent that a company such as the

Natural Gas Pipeline Company does not have. There may be other local situations that I cannot think of at this moment with a question like this thrown at me.

Yes, I think it is true that the factor of municipal competition affects the electric industry generally and is a factor affecting the risk of the electric industry. I have just said that Federal competition is a risk; and municipal competition is in a similar position, in certain parts of the country. I would say that in other parts of the country municipal competition in the electric field is practically nonexistent. I have never heard of defendants having to face the threat of municipal competition. I have never heard that the companies which they serve directly or indirectly face the threat of municipal competition. The gas business is a business that municipalities, generally speaking, have not been particularly interested in going into. I would say that it is a fair statement that investors in purchasing the securities of defendants would not be concerned with the risk of municipal or any other form of governmental competition. I understood when you used the term "municipal," you were referring to cities and not to actions by either state or Federal agencies.

It is true that electric companies have substantial investments in poles and wires. The ordinary electric company which has distribution has a substantial portion of its investment in poles, wires and fixtures. That is true of transmission companies. The wholesale generating company would have less. It would have the major portion of its investment in its big plant or plants, and usually a much smaller proportion in its transmission lines and sub-stations.

The distributing company which purchases its electric energy would have a substantial investment in long distance high power transmission lines. As to whether these facilities are underground normally depends upon the locality and the particular practice of the company. In many cities practically everything is underground. In rural areas or in smaller cities a great deal of the transmission or
1258 distribution system is overhead, on poles. In the country through which defendants' lines are located, I would say electric companies would have a very large portion of their transmission and distribution system in overhead construction. Such property faces the possibility of damage or injury as the result of sleet or other storms in varying degree.

I don't think the same sort of storms give equal hazards. Defendants' pipeline has been damaged as a result of floods and rain storms. They have not been damaged by sleet storms, to my knowledge. Possibly the telephone line along the pipeline has been damaged by sleet storms, but I know of no damage to this pipeline by a sleet storm. The telephone investment of defendants is relatively small—somewhere between 1 and 2 per cent of the total investment. I agree that electric companies face the possibility of damage to a substantial part of their property as a result of sleet storms. In certain areas in the United States which are in the sleet belt, there have been from time to time storms that have caused damage to the wires of electric companies. Those conditions are not general throughout the United States. I think Illinois and the northern tier of states are more subject to sleet conditions than the southern states. I agree that these companies would not face the possibility of any damage to their property as the result of sleet storms and storms of that character, while an electric company or a telephone company operating in the same territory would face the possibility of damage to its overhead property; but I think it is important to keep in mind the magnitude of this possible damage. Largely all of this company's property is underground. As a general thing, this company does not suffer the same hazards of damage to overhead, over-surface property that electric utilities do, generally speaking throughout the United States.

I testified as appears on page 5465 that, "For a number of years, the gas industry has been suffering in competition and has lost substantial amounts of its domestic business." That statement was intended to apply, as the record says, generally speaking, but it also does apply to the local distributing companies directly or indirectly served by defendants, I think if the analysis is made, it will be shown that the distributing companies are losing domestic business, base load, all the time; but they have been at the same time taking on sufficient new business of a different category to perhaps make the overall showing not so bad.

The principal customer indirectly of defendants is the Peoples Gas Light and Coke Company. I have some statistics which show the number of customers at the end of 1934 to be 814,367. The corresponding figure for December 31, 1938 was 847,000. That is an increase of over 30,000 customers. The average number of customers of Public Service Company of Northern Illinois, in natural gas terri-

tory, for 1934 was 13,469. The customers are split into two categories—natural gas territory and mixed gas territory. The mixed gas is a mixture of artificial with natural gas that comes from the lines of defendants. Adding the two figures, I get the average number of gas customers of Public Service Company of Northern Illinois in 1934 to be 141,010. The figures I have with respect to these companies were requested by me from Natural Gas Pipeline Company, and I understand were obtained from the distributing companies or Chicago District Pipeline Company, I am not sure which. The corresponding figure for December 31, 1938 was 156,970, an increase of about 15,000 customers. However, I think it should be said that the revenues of that company have declined in the domestic field. The revenues from the total sales of gas in 1934 by Public Service Company of Northern Illinois amounted to $7,153,102. The corresponding figure for 1938 is $8,527,540, an increase of nearly 20 per cent.

1259 The Western United Gas and Electric Company is another company which uses the natural gas served by defendants. I have the corresponding figures for that company for the Northern Division. The Southern Division, of course, is not connected and is independent. The revenues for 1934 were $3,796,820 and the corresponding figure for 1938 was $4,208,573, an increase of about 10 per cent.

The figures I have read are the total revenues from the sale of gas for the companies mentioned.

The total revenue of Peoples Gas Light and Coke Company for 1934 was $32,696,883, and for 1938, $37,910,773, an increase of approximately $5,200,000, which is around 15 or 16 per cent.

I got the figures I have been reading about June of this year. It is my position that in the determination of the question of rate of return, the Commission should give consideration to the individual facts affecting the operations of defendants. When I stated that the gas industry had lost substantial amounts of its domestic business, I intended that statement to apply to this case. When we talked about domestic business, probably it is apparent that I was speaking generally, but I also say that the distributing companies which we have been discussing have, over a period of years, been losing domestic business—their domestic revenues have been going down. They have more domestic customers than they had 5 or 6 years ago, but revenue is what counts.

Their total revenues are higher than they were five or six years ago, but lower than ten years ago.

The house heating load is a part of the domestic load of a utility, but an insignificant proportion of the average company's load. (Motion to strike by Commission Counsel denied.) In 1938, the total revenue of the Peoples Gas Light and Coke Company from space heating, which includes not only central house heating installation, but also such items as radiant heaters and thinks like that, which are not really proper house heating installations, was $2,500,000, out of a total gross of approximately $38,000,000. The domestic is $22,000,000, of which approximately 11 or 12 per cent is from total space heating. I said an insignificant proportion of the domestic load of the general run of gas utility companies; and I also wish to state that I gave it here as the total space heating, which is the way that I have the figure broken down. This is not an ordinary concept of house heating. Approximately half the space heating customers really have house heating installations—actually 13,400 out of the 23,825 total space heating customers. Breaking the revenue down in the same way will result in the actual house heating revenue of $1,200,000 out of $2,200,000, or 5 per cent of the total domestic revenue. There is a reason why these two items should not be considered together, because really the service and revenues derived therefrom are different in character. One is, I think, more stable and more basic than the other. A person makes the installation of a central house heating job which requires an investment of several hundred dollars, and once it is in, assuming normal economic conditions, it will tend to stay in. The other space heating revenue is from radiant heaters, very small gas appliances. If they had a separate trend from the central system, the statistics might well be kept separately to manifest the trend. It happens that I have the figures only one way; and I wished to make it clear that the way I have them combines both types, because in ordinary nomenclature, house heating is referred to as a central gas fired boiler.

1260 In the reports of utilities such as the Peoples Gas Light and Coke Company no distinction is made between the profit earned from the sale of gas for domestic purposes and the sale of gas for other purposes. The total revenues are lumped together and expenses are deducted from them in arriving at the profits. A trained investor certainly knows the amount received from domestic purposes

and the rate received, and the amount received from industrial customers and interruptible customers, and all such things.

Referring to my testimony at page 5469, in which I stated that in my judgment the distributing company which serves natural gas is in a weaker position as to risk than the company which serves manufactured gas, I would have to answer that question now the same way I answered it there. I think you have to look at it from two points of view. From a short-range point of view, a company distributing natural gas is in a better position to meet other competitive fuels than the company which is distributing artificial gas. However, from a long range point of view, with the uncertainties which exist with reference to the future supply of natural gas, it may be that the companies now supplying natural gas will in the future be forced to reconvert their systems back to artificial gas, at which time a great disturbance in business will take place.

I think the Peoples Gas in the light of all the facts I know about that company is in a better position today to meet competition of other fuels than it was prior to the introduction of natural gas. It can meet competition with other fuels by selling fuel in the form of gas at rates which make it advantageous for the consumer to use gas rather than other fuels, such as oil or solid fuel. That is possible because it has a cheaper kind of gas in natural gas as compared with artificial gas.

If the company reduced its rates it would be in better position as to competitive fuel. I think it is a maxim, that as you reduce the rates of your product, you are in a better position to meet competition. However, in making that statement it must be borne in mind that it is not always feasible to lower your rates to get business just for the sake of getting business. A company has certain financial requirements that must be maintained in order to keep it solvent. I think I could illustrate that statement in this way, that if Peoples Gas Light and Coke Company cut its rates in two, it would sell an awful lot more gas in Chicago; but it probably would be in the hands of the receivers within a year or so, or perhaps sooner. That is true because it probably would not earn enough to pay its bondholders. The margin between sales price and the cost of gas, including other operating expenses and taxes, would not be sufficient for it to meet its charges.

There is no direct relationship between fixed charges and

rates. Rates, of course, are translated into revenues, and revenues must be sufficient to meet operating expenses, taxes, and fixed charges, or the company will get into trouble. When I said a moment ago that the feasibility of reducing rates was determined in part by the fixed charges of a company, I think I probably should have also said by its operating expenses and taxes and all such other items.

In determining the risk of defendants, consideration should be given to the companies served by these companies. I gave consideration to those companies. I remember distinctly without referring to the testimony that I referred to the contracts that existed. Obviously, one could not consider the contracts without taking into consideration the companies who were really the guarantors on the contracts. I don't think I stated specifically that the only thing I considered in connection with those contracts was the term

and the price that was paid for natural gas under those
1261 contracts. I think I said that the principal things that

I gave consideration to in those contracts were the terms and the price; but obviously, looking at the price and the terms of those contracts that I was perfectly familiar with, I took into consideration the companies who were buying the gas. (Motion to strike "obviously" by Commission Counsel denied.)

I testified, as shown from the record at page 5534, that I gave consideration to the terms of the contracts under which gas is sold, the length of the contracts, and the price at which it is sold. These, I think, are the principal factors.

I don't think that I specifically in response to Mr. Booth's questioning stated that I had given consideration to the guarantees by the three distributing companies. However, I think it is obvious that I must have because I stated very definitely that I had read the contracts and the amendments thereto. I did give consideration to the guaranties. I could not read the contracts without coming across the guaranty at the end of the contracts. That guaranty is an outstanding feature of the contract. I would not say that it is the principal feature. I believe the principal features of the contracts, as I originally stated, are the obligations to purchase a certain amount of gas extending over a certain period of years at a certain price. It is well known that the contracts were modified at a later date.

It would be perfectly proper for the Federal Power Commission in considering the risks of these companies to give consideration to the guaranty of the Peoples Gas

Light and Coke Company of those contracts. You are not correct in saying that I said I did not consider the guaranty was a factor of any significance affecting the risk of these companies. I testified to the facts you have read from page 5537 of the record. I knew of this guaranty at the time I so testified. I did not so state to the Examiner at that time. I did not and do not now consider it the most important feature of the contract. I think it was of importance and of substantial importance, but I have stated that I thought the two outstanding features of the contracts were the terms and the price.

I don't believe I am able to quote the assets of the Chicago District Pipeline Company. I have not got the figures here. I did not investigate the assets of that company. The Chicago District Pipeline Company is unimportant to me. The real strength of the guaranty comes from the companies who are actually selling and distributing gas—the Peoples Gas Light and Coke Company, the Western United, and the Public Service Company of Northern Illinois. I will accept your statement that the assets of Chicago District Pipeline Company are approximately 3½ million dollars. That company does not serve any domestic consumers, to my knowledge. It may serve some industrial consumers, I am not sure. I think it was originally organized as the Will Cook Construction Company back in 1930. It had no business of any kind prior to that date.

As to the contract entered into between Natural Gas Pipeline Company of America and the Chicago District Pipeline Company, the risk of the former would be substantially higher without the guaranty of the three distributing companies. I think the contract has added strength because of the guaranty by the three distributing companies.

1262 I am familiar with the arrangements under which Chicago District Pipeline Company sells natural gas to the distributing companies. It is obvious that the Natural Gas Pipeline Company enterprise would be riskier if there was no such arrangement or no contracts as guaranteed between that company and the distributing companies. As to whether or not I would recommend the purchase of securities of defendants in the absence of such a contract or arrangement, I should hate to give a horseback opinion. Generally, I would not recommend the purchase of securities without a careful study and a satisfaction to myself that the markets were permanent and real

rather than transient. I say permanent and real, at least, semi-permanent. I think that informed investors would feel as I have stated. They probably would not purchase the securities under those circumstances.

I testified as shown in the record at page 5491 from which you have just read. I considered the facts set out in that part of my testimony which you read. In reaching my conclusion, I assumed that this was a pipeline, producing and transmission system with no control over their markets and with no distribution system, and I so stated at the time.

You asked me what investigation of the affairs and the history of defendants I made prior to the time I testified. I think the first thing I did was to study Volume 62 of the Federal Trade Commission investigation of the two companies. I think the next thing I did was to start to assemble in my office certain statistics of natural gas companies, and to get together figures as to investments available in other fields. That last would include study of prospectuses and recent financing of natural gas pipeline companies, utilities, and other companies. I then requested information of a statistical and financial nature from the company officials and received from them in due course a rather large amount of such information. I talked to Mr. Floyd C. Brown and I think he talked to me about the history of this company.

I distinctly remember everything that I did. I went to Chicago and met company officials including Mr. Brown, Judge Morgan, Mr. Hedrick, the treasurer and other people, and inspected the northern end of the line, and the measuring and reducing station at Joliet. I then went to Texas and visited the property of Texoma, conferred with Mr. Dickinson and other officials, and then drove through the acreage, inspected the wells, inspected the Fritch compressor station, went north along the line to Gray, Oklahoma, near where the southern connection of the Natural Gas Pipeline Company line ties on to the Texoma line, and visited the compressor station at that point. I then returned to New York and compiled statistics which I eventually used in the exhibit which I prepared. I think I had one further trip to Chicago to ask additional questions which were not clear to me and to confer with Judge Morgan with respect to the scope of the testimony. During the process, I should say that I requested and received maps and certain other data.

I had a general conversation with Mr. Brown. I cannot remember the details of it. I don't remember ever dis-

cussing the circumstance that defendants had no control over the market with Mr. Brown, and I don't think I would depend on him. I would form my own opinion as to that.

The opinion I have expressed here is my own; and I
1263 have so stated. I investigated the history of the project. I read portions of Mr. Brown's testimony. I am not sure I read it all. In answer to your question as to whether I knew when I testified that they were partners in this enterprise, I knew the facts with reference to the ownership of the Natural Gas Pipeline Company of America. (Objection by Company Counsel to use of word partners overruled.) The history of the development is clearly outlined in Volume 62 of the Federal Trade Commission investigation. I am not sure whether I stated or not that that was one of the factors that I considered in arriving at my judgment as to what this company's return would be. Page 1 of my information here shows the ownership of the stock back when the company was started and as it is now, and the ownership of the bonds. I did not put that page 1 into evidence on my direct testimony. I have stated that I assumed that there was no control over the markets by defendants in arriving at my judgment.

I certainly knew that the Natural Gas Investment Company had a substantial interest in the stock of this company and the bonds of this company. I don't remember reading the testimony of Mr. Brown at pages 1944 and 1945, in which he discussed the fact that the Chicago utility companies acquired from Gulf Production Company vast reserves of acreage in the Texas Panhandle, which defendants were anxious to obtain possession of, and that they were the logical marketers of natural gas in the Chicago area. In connection with that testimony he referred to the Chicago utility companies as a partner in the enterprise. I knew of my own knowledge about the investment of Natural Gas Investment Company in this enterprise, and I took that into consideration. It is correct that I testified that as one of the basic factors in arriving at my conclusion that this company was entitled to an 8 per cent return, was that they had no control over their markets. A number of pages in the record after I said that they had "no control of the market" in response to cross examination, I stated clearly my definition of "no control of the market," and that it meant no control of distribution facilities. (Objection by Company Counsel overruled.) I do not agree

that it would be obvious that where there was a partnership relationship between the distributing companies and the pipeline company, that that thereby gave the pipeline company control of the market for the sale of the product. I cannot answer it because the question is complicated to me. I would have to know definitely what the partnership is.

I referred to price as an asset of the contract to which I attached some significance in measuring the risk of defendants. I had in mind other risks which to some extent are common as to other public utility companies. In a greater or less degree the risks of lighting costs with fixed contract prices and output as I stated on page 5487. That is what I had in mind when I referred to the price as influencing my judgment as to the risk of this company. I had in mind the particular scheme under which the defendants sell gas under their contracts. They have a demand charge plus a charge for the commodity with reference to the firm supply which is sold to Chicago District Pipeline Company. I referred to the contract price as a factor making for additional risk because of the difficulty of changing the price.

With this enterprise financed and engineered and built under the scheme whereby the revenues and the earnings of defendants were to be derived under contract form, any modifications of operating expenses upward would tend to be troublesome to defendants, because of the difficulty of increasing the contract price. It might be increased by negotiation, I suppose. It is true it has been decreased since the original contract was entered into. I was speaking then of the possibility of increased costs to defendants, with revenues more or less established by contract. Increased cost of operation as to labor and materials and of maintenance, and increased cost of gas in the field would lower the margin of profit.

The present price features of the contract under which defendants sell 120 million or something like that with a demand rate of $5.25 plus the commodity charge is a
1264 factor which is of substantial importance to defendants; and it tends to give them a stability that they would not have if they sold the gas on a day to day basis. I have known about that phase of the contract for years; long before I ever came into this case. At the Equitable, we were large holders of Peoples Gas Light and Coke Company bonds, and we were quite familiar with the con-

tract when it was originally entered into and when it was modified. The fact that they had a contract under which they sold a large amount of gas with the demand feature and the commodity charge certainly did enter into my judgment of this enterprise. I so indicated in my original testimony. I said I gave consideration to the contracts and the most important things in the contracts were the term and price. In my direct examination, I certainly said I took into consideration the contracts.

The annual amount of these demand charges is approximately 7 or 8 million dollars a year. I can not answer the question as to what other natural gas pipeline company has the same assurances of annual revenues, whether or not it sells one cubic foot of gas, or whether or not one cubic foot of gas is purchased by the distributing company. I don't know. I think you would have to break down that question on the point of magnitude of the enterprise. This company is a large enterprise and does receive, as you say, 6 or 7 or 8 million dollars a year demand charge from the buying company. In speaking earlier of the company selling 120 million that was 120 million cubic feet per day. The demand charge in 1938 paid by Chicago District Pipeline Company was $7,481,859. It also receives demand charges from other sales that it makes, but to a considerably smaller degree. The total demand charge in that year was $7,984,798.

I have a general familiarity with other pipeline companies and their methods of sale of gas. I don't think that I could repeat the details of them here. One other very large one is, of course, the contract under which the Detroit City Gas Company or now the Michigan Consolidated Gas Company buys gas from the extension of the Panhandle line. There is a demand feature in that, but I cannot state the amount in dollars.

(Company Counsel offers now the contracts on file with the Federal Power Commission of all the pipelines taking gas from the Panhandle field; namely, the Colorado Interstate, Cities Service, Panhandle Eastern, Northern Natural, Lone Star, and the Consolidated. Examiner stated that the contracts could be offered later.)

I know something about the price provisions of the contracts of other natural gas pipeline companies. I have read a great many of them, probably all of the important ones, from time to time. I don't remember the figures. I would have to refer to my files, but I could quickly find it. There

is a demand feature in the contracts of Northern Natural Gas Company for sales of gas.

I did not specifically investigate the details of those contracts at the time I was determining the risk of defendants; but I had extended previous acquaintance and knowledge of the contracts of Northern Natural Gas Company, due to the fact that I participated as a representative of The Equitable in the purchase of $4,000,000 of bonds of the company in 1935. I am not sure of the exact time when Northern Natural Gas Company entered into contracts for the sale of natural gas to the companies operating in Minneapolis and St. Paul. It was within a year or so of 1935, and it is my belief that it does not sell gas in the City of St. Paul right now. It does sell natural gas to the Minneapolis Gas Company. I don't remember the term of that contract. I am not sure whether the contract had been entered into when the bonds were purchased by the Equitable.

1265 As to the total amount of fixed charges of this company, the bond interest of defendants would be approximately 6 per cent on $45,000,000, about $2,700,000, as of the present. My understanding is that the demand charges are payable simply for the right to take gas whether or not gas is delivered.

I think the Wisconsin Electric Power Company had a similar contract up to a short time ago. The company has recently been merged with the Milwaukee Company. That company has nothing to do with gas. He asked me to name, I thought, any other public utility company that had any such contract under which it would receive, regardless of output, sums in anywhere near the same relationship that defendants did, to its fixed charges, and I gave the first name that I could think of. Answering the question as to whether the contract is any longer in existence, I said the companies had been merged just recently. I should say that a somewhat similar contract would be that between the Mississippi River Power Company and the Union Electric Company of Missouri. I have not the amount of demand charges in my head. I have only a general idea as to the relationship.

I have testified here that a fair rate of return for defendants would be 8 percent. I have stated in the course of my testimony that I have been called upon to advise in-

stitutions and others with respect to the investment of funds.

If I were given $50,000,000 today and were asked to invest that money for the purpose of producing a return of 8 percent on that $50,000,000 for the next 15 years, I don't know offhand where I would invest it. I am familiar with the investment business, but one does not give a horseback answer to a question like that. I have some ideas where that money could be invested to produce a return of 8 percent. You ask if I know that they would produce a return of 8 per cent for the next 15 years and still be sure of the principal amount of money invested. I could not qualify for a prophet's role—such as you have outlined to me.

I think the Peoples Gas Light and Coke Company is in a better financial condition than the Brooklyn Union Gas Company. It is now serving a mixed gas in the territory it serves; and to that extent is, in my opinion, in a better position to meet competitive fuel conditions than is the Brooklyn Union Gas Company. The latter serves only artificial gas.

I made some investigation as to the needs of defendants for additions to their property during the next two years. As to the amount, it would just be a guess. I would just guess around a million or a million and a half a year.

I testified that the risk of a pipeline company such as defendants' was substantially greater than that of a gas distributing company. I think there are aspects of the operations of the gas distributing company which contain risks which are not inherent in the operation of a natural gas pipeline company such as defendants'. I should hate to enumerate all of them offhand, but one that comes to my mind immediately is in connection with a manufactured gas company serving an urban area with a large part of its expenses going to labor. It might have labor troubles; and the possibility of labor troubles, perhaps, is a greater hazard in a distribution company where the labor is a greater proportion of the gross than in a pipeline company where it is smaller. I would have to refer to my statistics to give you the proportion of the annual labor cost of this company to its gross revenues. It is substantially smaller than for a city distribution company. It is substantially smaller than the labor cost for an electric or telephone or a gas operating company.

Another risk which a pipeline company does not have in the same degree is the possibility of increased labor
1266 costs if wages go up. The pipelines would have this risk but it would be less proportionately. Inasmuch as the present labor costs of the distributing company are larger in proportion to gross revenues than those of the pipeline company, then with a substantial increase in labor costs, I think the effect would be more detrimental to the distributing company than to the pipeline company. I do not think that I have the proportions of annual labor cost to the gross revenues broken down in this tabulation here. In my breakdown of the operating expenses, labor is not segregated out from the primary accounts. I have some idea of the labor costs in this enterprise, but I would have to go through all of my data here to find out the exact figures. I have stated that defendants have fewer employees per dollar of gross than does a company such as the Peoples Gas Light and Coke Company or the Illinois Bell Telephone Company, or the Commonwealth Edison Company. The defendants have about 600 employees.

I made a careful study of the risks of defendants as compared with the risks of gas distributing companies. Of course, the contemplation of those risks and the weighing of those risks is something that takes place in the processes of the mind. I am not prepared to state at this time any other risks which are inherent in the general type of electric or gas utilities that are not inherent in the Natural Gas Pipeline Company. They are not the same kind of business, and many of the elements of each business are so different in character as to make any such comparison meaningless, in my opinion.

It is not difficult to make a comparison of the risk, Mr. Booth. Anytime that an informed investor buys securities, he knows what the risk is, or at least he has an opinion of the risk at the time that he makes the investment. Because of the difference in the characteristics of the companies, it is difficult to compare the risks of pipelines with those of utilities, but it is possible to do. I have said that I can not generalize in response to your question as to what are the other aspects of their operations in which the operating companies have risks which the pipeline company does not have.

I did not testify that the risks of manufactured gas distributing companies were higher than the risks of a natural

gas pipeline company. I said that the risks of distributing companies were less than those of pipeline companies. It is my belief that the risks of a company such as the Natural Gas Pipeline Company are greater than the risks involved in companies which distribute gas, that is generally speaking.

I am able to discuss risks both in general and specifically with reference to companies which I have had occasion to look into in the recent past. (Objection by company counsel.) I can not tell you about the risks of gas operating companies which do not apply to pipeline companies, because the risks of the operating companies are, generally speaking, to some extent present in pipeline companies, but it is a question of degree. I have stated that the distributing companies have a greater risk of labor trouble and of increased labor costs than do pipeline companies. Without getting down to specific companies, I can not tell you whether or not that is the only item in which the gas distributing company has a greater risk than the risk of a pipeline company.

1267 *Questions by the Examiner.*

I have made some specific analysis of distributing companies by way of comparison. I recently appeared in rate cases involving two rather large gas distributing companies in the State of New York: The Rochester Gas and Electric Company and the Brooklyn Union Gas Company.

I think the risks in the distributing companies probably also appear in the business of defendants, but in different degree; and unless you are discussing two particular companies, I do not think that you can generalize about it. You might take the question of materials in a gas distributing company. There the cost of materials takes up a rather large proportion of the operating revenue or operating expenses. Depending upon whether or not the cost of coal goes up, and also depending upon the location of that utility and the transportation charge of the coal, will depend the results of that company. Now, similarly, if the cost of production of natural gas down in Texas goes up, the cost of operation of defendants will increase. On the question of sales, a company which is a distributing company and has control over its markets may, in view of peculiar local or other economic conditions, decide to make a sales cam-

paign or do something to increase its sales of gas in a certain category. A pipeline company which has no control over its markets is not in such a position.

Cross-Examination by Mr. Booth Resumed.

Defendants are handicapped by the fact that they do not determine what shall be done about the sale of natural gas by the companies who sell their natural gas. They have some possibilities of control of the sales of boiler fuel and industrial gas, which is not a large proportion of the revenue; but in respect to the gas sold under firm contracts, they have no such control. I do not say that they are handicapped today. They may be. The result of my investigation showed that they might be. I do not think they have been handicapped in the past. I am not positive that they will be handicapped in the future.

The Peoples Gas Light and Coke Company spent money to promote the sale of natural gas in the City of Chicago. They spent a number of millions of dollars in connection with the change over, and I understand that they have spent additional money in an attempt to promote house heating and other large volume sales of gas. As a matter of fact, the Natural Gas Pipeline Company was in a distinctly advantageous position because it did not have to bear that expense. That is the usual practice. The distributing company usually pays the cost of the change over. It is customary for the company who is actually selling the gas at the point of sale to pay the cost of promoting that sale.

All of those things that I have named have not been factors indicating where the hazards of the gas distributing companies are greater than those of the pipeline companies. I have simply named some of the factors which are hazards of gas distributing companies and where their hazards might be greater or less. I can not think at this moment of any other hazards.

Assuming the accuracy of the testimony of defendants' experts as to the life of their reserves, and assuming also that on their calculations, the investors would have been returned the money that they invested in the property. The companies, at the time of the exhaustion of their supply, would probably be able to cease business. The Peoples Gas Light and Coke Company would probably have to get a

certificate of convenience and necessity in order to terminate their operations at that time. The Peoples Gas Light and Coke Company could not terminate its operations merely because the supply of natural gas of this com-
1268 pany had been exhausted. As a practical matter, they would have to try to find some substitute supply. They are now supplying a mixture of artificial and natural gas. They still carry and operate certain of their artificial gas manufacturing plants, and they undoubtedly would continue in the operation of the gas business in the City of Chicago.

I am not able to state what proportion of the investment which defendants made in their pipeline property has already been returned to the investors. Defendants originally started out with a thousand shares of stock. Soon after they got going, they had $61,000,000 of bonds and $3,000,000 of stock. I presume that was intended to represent the investment in that company. The capital structure today is about $44,400,000 in bonds, and $3,000,000 of common stock. The total bonds redeemed to date are $16,600,000. Out of the $64,000,000 representing the investment of bonds and capital stock, the bonds redeemed amount to approximately ¼ of the original capital structure. (Objection by Company counsel overruled.) Offhand, I cannot name a gas or electric distributing company which has retired in the last five years, 25 percent of its debt; but in evaluating the hazards, it is well known that investors because of the extra hazards of the natural gas pipeline companies, require the amortization of their debts over short periods of years, and do not in buying distributing companies' securities require any such sinking funds. That is well known.

The reason generally for the amortization provision is because of the difference in the fundamental character of their business; namely, that the natural gas supply and transmission business is primarily an extractive business which might be limited for a specific period, while the business of an operating and distributing company continues indefinitely. The reason for the investor's demands that pipeline company debt be amortized rather rapidly is because it is an extractive industry, and investors are uncertain of the future of that industry.

It is not my understanding that by debt reduction the capital is being retired. The changes in capitalization are proportionate. The debt is being retired, but at the same

time the equity holder's stake in the future is greater. If the equity holder and the bond holder are the same, the total investment remains the same, only it is in different proportions. As the debt is retired, his investment in the bonds becomes smaller and his investment in the common stock becomes larger. The investment by the bond holder represents capital embarked upon the business. These companies are retiring their bonds from the earnings of the companies. By earnings I mean the difference between the operating revenues and expenses, and the bonds are retired from the cash which is in the till of the companies. I could not earmark a dollar like that and say cash exclusive of amortization charges.

I assumed that when you said "amortization", you meant depreciation. The bonds that have been retired by this company have been retired through using the cash available in the treasury of the company. That cash, of course, is derived from the earnings of the enterprise, and the total cash generated in any one year is dependent on the earnings, the amount of money going into construction and the amount of provision for depreciation.

1269 At page 5471 of the record I referred to the fact that the City of Chicago at one time had a supply of natural gas. It came from a very large field in the extent of acreage covering quite a sizeable portion of the State of Indiana. I cannot remember the total acreage of the fields. I have reports and studies of that enterprise in my files. I don't remember the amount of the gas reserves. The period during which natural gas was supplied to the City of Chicago was around the turn of the century. It may have been five years before and possibly a few years after. I don't remember the exact number of years natural gas was supplied. I did not intend to compare the size of the reserves of those fields with the Panhandle field. I simply mentioned that as indicative of what had gone on in the past and as something that investors remembered. I don't know whether the rates were increased in Chicago after the gas company returned to the supply of manufactured gas.

I spoke of the possible failure of supply as a factor in the risk of this company. I consider it an important factor. I cannot say how important, but I think it is of substantial importance. I certainly gave weight to it in arriving at my judgment as to what was a proper rate of return for this company and in forming a judgment on a matter

of this kind, it is impossible to say exactly and precisely how much any one risk is involved or how much influence any one risk has in the formation of your final judgment. You ask if I would say it was a major factor. I hesitate to classify such intangibles in such definite categories. I would rather say that it was certainly one of the factors which I considered in evaluating this company and determining what I considered a fair and proper rate of return. In forming an opinion of this kind, it is impossible for me to classify and state the magnitude of all of the various factors of risk which I give consideration to.

It is a judgment matter and my position today is that it is not possible to state that it was one of the principal factors in arriving at my judgment as to what the risks of this company were. I think the best way to say it, and the way I like to say it is that it is a substantial factor to which I gave consideration. I can think of no other factor at this moment of any greater importance.

You asked what investigation I made of the reserves of this company. In the first place, I was, through previous experience in investing, to some extent familiar with the reserves of the Panhandle field. I have studied reports of prominent geologists going back at least 5 or 6 or more years which had been furnished to the Society in connection with the consideration of investments. The geologists' reports which I read included reports made for the United Gas, Public Service, Panhandle Eastern Pipeline Company, Lone Star Gas Corporation, and some others including the Northern Natural Gas Company. The firm who made the most reports that I can remember was Ralph Davis. You ask what he concludes about the life of the field. Those reports were made at varying times and for different companies whose supply was from the Panhandle and other fields. I have no recollection at this time of any specific figures in trillions of feet. I have a range in mind, but I don't remember the exact figures. In addition to that, I of course obtained data from the defendants and studied certain exhibits which have been prepared in this case, and talked to certain people in reference to their exhibits where estimates had been made on the life of the field. I talked to the people that were employed by the company,
who had made the studies. I talked to people in my
1270 own organization generally on this matter. I did not
make an independent inquiry among other geologists to determine the accuracy of the estimates made by de-

fendants. I did not retain Ralph Davis or anybody like that.

I know that Mr. Claude Brown has testified in this case. I understand he is an employee of the Federal Power Commission. I do not know to what he testified specifically. I believe I heard that he testified that the field had a long life, but I did not specifically get his figures in support of that. I have made the investigation that I considered necessary to form my opinion. It was not necessary in forming my opinion to get an absolute idea as to the length of life of the field. In forming my opinion, I assumed that the field will last at least 15 years. I am assuming that the life of the field will be 15 years, but of course there is the possibility that it will go out before then. I did not say that was the principal factor in evaluating the risk of this company. I said it was a substantial factor, that the hazard of the shortening of the life of the field was a substantial factor, and that I could not think at the moment of any other factor which was of greater importance.

You ask me the following question: "In arriving at your conclusion of 8 per cent, you gave consideration, of course, to the possibility, and as you say that was the most important factor you can think of, of failure of the supply between now and the end of 15 years." I have never said, of course, what is asked in the latter part of your question, and I do not wish to say it. I will repeat again my consideration of this factor. I said it was substantial. I have said that at this moment I cannot think of any factor of hazard which I consider of greater importance than the failure of the supply. The 8 percent does include the consideration of the risk due to the possibility that the supply may fail. In my mind there is a distinction between this phrase "factor of importance" and "principal".

At pages 5485-6 it appears I testified, "In any natural gas pipeline, a company which produces and/or purchases natural gas and transports it through a line for sale, such a company is subject, of course, I think, to the principal hazard of the possibility of failure or shortened life of the supply." I think my recent statements are more accurate.

There have been a number of failures on defendants' line. In my tabulation of failures, I find four failures, one in 1936, and three in 1938. In the first failure, on July 4, 1936, the estimated curtailment of sales was 24 million cubic feet. On February 13, 1938, the estimated curtailment of sales was 468 million cubic feet; August 14, 1938,

17 million cubic feet; and on August 20, 1938, 36 million cubic feet. That would be a very small percentage of the total sales of the company in the 8 years. It appears to be about .2 of 1 percent.

In my investigation of the estimates of the life of the reserves of the Panhandle field, I do not remember examining the estimates of Thompson and Hughes, who testified in this case. I examined Mr. Peterson's figures, and portions of Mr. Dickinson's testimony. The latter were employees of defendants. I saw other figures but I do not recognize the names of Thompson and Hughes. I did not investigate the estimates that they made of the life of the field in 1934. I do not know what life of the Panhandle field these geologists testified to in 1934. I made no effort to find out. Of course, I was not able to compare their estimates with the estimates that were made by defendants' experts in this case.

I don't remember examining the record at all in the Chicago District Pipeline Company versus Lindheimer case. I understand that by "the record" is means a transcript of the testimony, evidence, exhibits, or anything that was submitted in that case. I have collected in my office in recent years all of the information possible in the way of briefs, opinions and things like that on such matters
1271 of this kind. I may have, but I have no distinct recollection of that case. I did not know that there was a great deal of evidence and information there bearing upon the early history of this enterprise; I have no memory of what was in that case. I have stated a number of times that I made inquiry as to the early history of this enterprise. I did not talk to a man by the name of Gallagher. I have heard of him but I do not know him personally. I understand he is an official of the Standard Oil Company with particular responsibility for natural gas operations. I know that he was formerly a director of defendant Natural Gas Pipeline Company. I read very carefully the Federal Trade Commission record which is quite complete on the early history of this enterprise, and I am quite confident that Mr. Gallagher's name was mentioned in there. I made no effort to determine whether the company in its early history made any estimates, or the officials of the companies made any estimates of the profits that they expected to make during the life of this enterprise.

I testified as shown on page 5495 of the record that an

investor would demand that the period of amortization under regulation be less than the life of the project as expected at the time he made his investment, in order to provide a factor of safety. If at a later date it is found that the project is going to last longer, the amortization could be changed at that time with no loss to anybody. It is not necessarily true that charges to amortization or depreciation determine the income of the company for rate making purposes. The amount of such charges is a factor that is taken into consideration. It would be a very important factor in this case. I have no particular knowledge at this moment of the amount of amortization, but it would be an important factor. I made no investigation of that.

The amount of amortization or depreciation charge is determined in this sort of enterprise by the estimated life of the field or the life of the reserves or the life of the project; I would think that would be the controlling factor. In my statement that "the amortization could be changed at that time with no loss to anybody," I meant that ordinary prudence would require that an amortization provision would not be set up on the exact life of the field. If a big institution is buying mortgage bonds of a natural gas utility company, and it has reports from the most eminent geologists that the life of the field is 20 years, no institution will buy 20-year bonds, but they will buy 15-year bonds.

I have said, I think, it would be a prudent thing to fix a shorter period than the indicated life as the period of amortization. I have not said that my rate of return depended on any regulatory commission doing that. I have said that my rate of return was 8 percent after proper provision had been made for amortization, whatever that was.

Assuming that the life of the field is taken at 10 years, which means an annual charge to amortization or depreciation for 10 years, and then at the end of 8 years it is discovered that the property in fact will have a life of 20 years, the rate payers will have suffered during that 8 years because they will be paying more charge for amortization than turned out to be necessary. I do not consider that that is inconsistent with the public interest, though. The rate payers from that time out could or might under regulation pay a very small amortization. It might be decided at that time by the regulatory commissions in that way.

Cross-Examination Interposed by Mr. Slaff.

1272 I was not speaking of the consumer at any given time in the statement I just gave. I think I was taking a long range view as opposed to the short range point of view, when I said that I did not think my statement there was inconsistent with the public interest. I do not think, generally speaking, that the present consumers should be burdened with bad practices or losses of the past. I do not think that future consumers should be so burdened; but I do think that regulation must adopt a broad viewpoint and consider the interests of both investors and consumers.

I agree with your statement that in considering the interests of consumers, we mean the public at large over a period of years, rather than the specific consumers at a specific time. I have heard of the case of Bronx Gas and Electric Company against Maltbie, decided on the New York temporary rate law in the New York Court of Appeals. I am not familiar with the language you quoted from that case. I think my views are expressed in the language of Judge Crane in that case, in which he said: "True it is that all the consumers paying the final rate, including the takeup, may not be the same as those who paid the temporary rate. A few consumers may be new customers paying what the old consumer should have paid. Such expenses are of minor importance. The percentage must be very small. We can never work our institutions of government if we refine matters to such an extent that we have to consider all these little details. The Constitution expresses fundamental principles, and if in the main these have been observed, this is all that can be required. Besides, when we speak of the consumer, the customer, we mean the public, not individuals."

Cross-Examination by Mr. Booth, Resumed.

You asked if under my theory it should turn out that the rates are high enough during the next two or three years so as to amortize all the investment during those first two or three years, then after that all the risk would have been eliminated at the end of that period, and from then on the rates could be based on no amortization and a riskless rate of return; my answer is I don't think it would be proper or economic or possible to do it that way. That was not what I was indicating in my testimony. I

am trying to give the practical answer and I am being asked to answer a completely impractical and theoretical question.

Your question is based upon an absurd interpretation of what I said. I am simply saying that from a practical point of view, an investor would demand that the period of amortization be "less than." I did not say "one-fifth." I said "be less than." I am taking by analogy the insurance company buyer or the institutional buyer of securities. If he is convinced from geologists' reports that the pipeline has a life of 20 years, he may be willing to buy bonds at 15 years. He wants that safety factor.

I think that the bonds of natural gas pipeline companies of substantial size have been sold to institutions on a 15-year life basis where the reports of geologists available to them indicated that the life of the field was 20 years. I think that perhaps I should add to that and say that perhaps a more common statement by the geologists is that the field would last not less than, or the supply should last not less than, 20 years, in which case the institution would buy on a 15-year basis. That observation was implicit in my earlier statements concerning which I have been asked here on cross-examination.

1273 (October 27, 1939.)

A substantial part of defendants' revenue is from sales of an industrial character where the profit margin is probably less per thousand feet than it is for the sales under the firm contracts. It is not unusual for a gas or electric utility company to sell a substantial portion of its product for industrial purposes. I testified that about 25 per cent of the revenues of defendants was obtained from gas sold for industrial purposes.

I am generally familiar with the operations of the Commonwealth Edison Company but I would not attempt from memory to state the percentages as between sales for domestic and for other purposes. My notion is that with Commonwealth Edison Company approximately 30 per cent of its revenues are derived from sales to residential customers, 20 to 25 per cent from sales to commercial customers, and 30 per cent or so from sales to industrial customers. The usual contracts of electric utility companies with respect to large sales of power under the industrial classification are firm contracts of either 3, 5, or 10 years

duration. That, in my opinion, is the situation with respect to the sales of Commonwealth Edison Company. I would not attempt to say what proportion of the industrial load is sold under the two-year, three-year, or five-year contracts. Any man would have to be an encyclopedia to attempt to remember those figures. I certainly know something about that company. I have made many analyses of that company and purchased millions of dollars of bonds of the company extending over a substantial period of years. I know the general nature of its contracts. I cannot remember myriads of statistics such as you are asking for. I have examined a contract between that company and an industrial customer. I don't remember which one. I don't remember whether I examined the contract between the Edison Company and the Illinois Central Railroad.

Questions by the Examiner.

I have made a number of investigations of the Commonwealth Edison Company probably starting in 1929. At the Equitable, we were a large holder of the company's securities, and from year to year we purchased additional amounts of bonds. The examination and checking of contracts would be one little detail in a broad investigation of the company's operations. The fact that an industrial consumer is using electric energy gives the supplier of that energy more of an assurance than if the supplier were a natural gas company, because of the type of equipment the industrial consumer has to install and the difficulties of changing to any other fuel. A company like the Commonwealth Edison Company obtains a contract or makes an arrangement with a company like the Illinois Central Railroad to furnish it energy; and the Illinois Central Railroad would have installed, perhaps, a receiving substation with transformers, and after that maybe hundreds of motors and lights where the energy would eventually be used. A large customer like that, however, could install its own Diesels or something of that kind, of course, but the installation of Diesels is, from the standpoint of capital investment, an expensive proceeding; and from the standpoint of technical operation is difficult. An industrial customer who is to be supplied with gas in most cases already would have equipment where fuel is now being

used to generate heat, in most cases coal-fired boilers. The gas company comes to him with a proposition and says "We would like to sell you gas; it will be simple for you to install a gas jet under your boiler and make
1274 the change-over, and it will be economical for you."

The cost of that change-over is not much. The costs of change-over to and from electric use are much more. You can see that the installation of a Diesel plant for use in the electric field would be much greater in cost than the installation under a boiler of a simple gas burner.

Generally speaking, large industrial concerns do not generate their own electricity. There has been over the last twenty years a gradual decline in the number of separate installations whereby industrial establishments generate their own electrical energies. There have been ups and downs in that movement, depending upon the course of fuel prices and the activity of manufacturers of such equipment; but generally speaking, the number of power installations in industrial establishments has had a downward trend. The electric companies find the industrial load a good load. Gas companies find the industrial load a good load too. Any load is a good load that provides revenue. My only point was that the margin of profit in the industrial business is less in relation to sales price than it is in the firm business.

Cross-Examination by Mr. Booth Resumed.

The Commonwealth Edison Company sells electric energy to transportation companies such as Chicago Rapid Transit Company and the Chicago & Milwaukee Railroad. Some of the companies who purchase energy from Commonwealth Edison Company have been in receivership or Section 77 proceedings. I am not sure that all of the bills have been paid. I have some recollection that the Edison Company was forced to write off losses on account of energy sold to transportation companies now in receivership, but I don't know the exact amount. I don't know that defendants have been forced to do that.

I just cannot take a position on the question of whether, generally speaking, the industrial load of a gas company is substantially smaller than the industrial load of a large electric company. I think I have a fair understanding of the statistics of these industries but I cannot answer that.

The only way to answer that question as to whether the industrial load of these companies constitutes a large or small percentage of the business of large electric companies and large gas companies would be to look at the whole industry. In 1938, the total revenue derived from sales to industrial and commercial customers in the manufactured gas industry in the United States, and that covers companies providing manufactured service and mixed gas service, was $69,000,000. The total revenues in that year were $360,000,000; so something less than 20 per cent of the gross operating revenue of the industry was derived from sales to industrial and commercial customers. I do not have the comparable electric figures here; but I believe that they would show a somewhat higher per cent of total revenue in the electric industry derived from sales to its industrial and commercial customers, I would say 50 to 60 per cent, I believe.

To the extent that we can generalize on a thing of that kind, I would be willing to say that in the last depression, or the depression that started in 1929, the industrial revenues fell off percentage wise at a faster rate than the revenues from domestic service. That is generally true in the course of a depression or decline in business. I would not say that the risk would probably be greater in the case of electric companies than it would in the case of gas companies. The gas sold by these companies under the boiler fuel and interruptible supply contracts is in many if not in most cases sold in competition with other fuels such as coal and oil, where the margin between the respective costs of the two fuels is very, very close; and it may be that a simple question as to the ease of use or a fractional change in the price will decide whether 1275 or not that customer will continue to take gas. With conditions of sales of that character, it seems to me that any change in the industrial conditions or any change in the conditions of cost of supply of other fuels where the margins are so thin, is a substantial factor to take into consideration in looking towards the risks that are inherent in an enterprise of this kind. Of course, as you say, the situation can work both ways. The price of other fuels might comparatively be greater than the price of gas, so as to give the gas an even greater advantage in the competitive market at a particular time.

I don't know whether the present trend of coal prices

is likely to be upward. I think I was in Washington when the Coal Commission was created and the coal laws were passed. I read that there are proceedings pending before the Bituminous Coal Division of the Department of the Interior involving the establishment of coal prices for the entire country. It is my understanding that no findings have been handed down and no coal prices have been established yet in the respective areas. It is not my opinion that in the absence of a definite act of the legislative or congressional agencies actually changing the status quo that the possibility of some action is not a factor to be considered in the determination of the risks of defendants. It is true that I have considered as one of the risks of these companies the fact that laws might be enacted increasing the taxes of these companies. As to whether it would be appropriate for me to consider a risk the possibility of the Bituminous Coal Commission's establishing in the very near future prices for coal which will increase the competitive position of the natural gas industry as compared with the coal industry, I have to work from a base which to me is reasonable.

I have stated that in my opinion the risks involved in this enterprise are greater than the risks in a gas distributing company. Such a company is taken as a base, as it is; and the risks are evaluated from that point on. So it is inherent that I have taken the gas industry as I see it and as I view its future. I don't know for sure that the natural gas industry's competitive position with respect to substitute fuels is improving. There are a number of factors which might have opposing tendencies. I did state that one of the factors of risk I took into consideration in my study of rate of return for defendants was the fact that a substantial part of the revenues came from the sale of interruptible or boiler fuel gas. The ability of defendants to retain their revenues from that class of business depends upon the price of coal, the price of oil and the price of gas. It does not depend altogether on the price of coal.

As to the present trend of the price of coal, I will have to examine certain statistics that I have as to the recent trend of the cost of coal. The cost of steam coal to large users in Chicago at wholesale in January, 1937 was $4.05. It moved in May to $4.25; in December to $4.35; in May, 1938 down to $4.05 and in July, 1938 back to $4.30, where it has been since.

It is my understanding that the Bituminous Coal Division is engaged in establishing bituminous coal prices for the entire country. I do not know what the marketing experts have recommended. I do not know whether they have recommended any prices. I try to keep informed about those things. It is not true that I try to keep informed only about those things that would increase the risks of the natural gas business. I did inquire about the possibility of taxes being enacted in the next few years. I did not make any inquiry as to whether or not the Bituminous Coal Division or their marketing experts had recommended prices which were substantially higher than the present prices. I
1276 was interested in determining everything that I thought of importance in finding the rate of return for this company. I don't think it of any great importance what a division of a bureau of a department of government had recommended with reference to coal prices. I do not know whether the proposed prices have been approved generally by the coal industry. I am quite confident the producers of coal would like to see high prices established, and I have no doubt that the district boards which represent the producers would like to see high prices. However, I do not consider it of great importance in coming to my conclusion as to the rate of return for these companies that the coal industry, as we have delineated it for this purpose, had approved generally the tentative recommendations of the experts of the Bituminous Coal Division of the Department of the Interior. I would consider that particular of some importance. I would also consider what the people on the other side of the table were saying about it; the consumers who were probably over there in the position of Mr. Booth saying it is too high now. Between them, I would attach considerable importance to that in my ultimate judgment, I think if prices had been established by a board—I would not say that I did not make any attempt to find out one way or the other what the respective sides were doing about that question. The question of coal prices has been something that I have given some consideration to not only for gas companies but for electric companies since the original laws were passed and then kicked out. I read in the newspapers about the proceedings pending before the Bituminous Coal Division, but beyond reading about it in the

newspapers, I did not make any effort to inform myself concerning such proceeding; I did not come down to Washington to discuss it with the Board, nor did I write any letters to the Board.

I don't know when the legislature of Illinois meets in regular session again. I seem to remember they meet every two years out there, but I do not claim to be an expert on that. The legislature has to meet, of course, in order to pass a law taxing the sale of natural gas. I have not made any independent investigations to determine whether the state administration has under consideration taxing the production of oil in the State of Illinois. I have read the Chicago papers and taken them in my office to try to keep informed. I know that the recent large increases in production of oil in Illinois are receiving consideration of the state administration. I don't know of any proposals that have been formulated with respect to it. In connection with my testimony, I was certainly quite familiar with the fact that this flush production of oil in Illinois in recent years was a factor to be considered. It had, as a matter of fact, resulted in depressing the price of oil in the Chicago market, and I think that this company probably lost gas sales because of it. I cannot name any individual cases. I have not collected any statistics here on an individual customer basis except on the utility companies.

I intended to include in the rate of return to which I testified compensation for risk. I named the figure that I thought would attract investors, and investors can only be attracted if they are given compensation for the risks which they undertake. On pages 6314 and 6315 I stated, in discussing the risks considered by the investor, "He is primarily worried about whether he is going to get his annual return for the use of the capital and whether he is going to get his capital back when he wants it." I stand by that answer. Possible failure to receive the annual return is one of the risks considered by me and by investors. That is generally true of all investments. I am testifying now as to the rate of return, which, as I view this enterprise, will be adequate to attract capital from an investor. I am making the best appraisal of the risks that I can in setting the figure at a point which I believe will make it attractive for an investor to put his money in. I may have made a mistake; I may be too low

or I may be too high. I have stated that the 8 per cent rate of return I named was a fair and reasonable return; that it was intended to cover the risks due to the possible failure of the investor to receive the annual return in a given year. (Objection by company counsel overruled.)

It covers in my opinion, all the risks involved and is
1277 sufficient to attract capital. I believe that the 8 per cent return will compensate the investor for the risks which he is undertaking. The investor in a regulated enterprise is never sure that he is going to get what he hopes to get. If a rate of 8 per cent is allowed by the Commission in this case, there is no clear guarantee that the company is going to earn that much money; but in my evaluation of risk in stating that 8 per cent will be a proper rate of return, I believe that includes compensation for all of the risks which the investor is taking, as I see the problem today, including the fact that he may not get the full 8 per cent. I think it is a general thing which is inherent in all investments in the regulated field, that when an investor invests in this field he knows that his profits are limited. He perhaps believes the field has more stability and is willing to go into it on a basis that seems attractive to him and compensatory for the risks which he is investing; not the general risk which is inherent in all investments, such as breakdown of economic conditions and things like that. My 8 per cent return is based on amortization which is proper to return the capital over the life of the enterprise, whatever that may be. I don't know what that would be and it seems to me to be a function of this Commission to determine what that is.

If we assume that the amortization is fixed on a 16-year basis, and in fact the enterprise only lasts 10 or 12 years, the investors might lose such part of their capital as was not recovered at the end of 10 or 12 years. I think that question has to be answered in the light of what would result in practice. This enterprise is now subject, as I understand it, to regulation. If rates are established based on facts existing today as shown in the record, and an amortization period is set up, it would certainly appear logical in my opinion that if at any other date there was any change in the facts as to the life of the field, that would certainly be brought to the attention of the Commission and other rate proceedings would be in order and some modification would

be made so that justice would be done to all concerned. Under the hypothetical facts submitted, if an investor held securities of this company in the form of serial notes which were to mature on January 1st of each year for 16 years, and the business of defendants ended through exhaustion of its fields or for some other reason at the end of 12 years, the investor would lose a part of his capital. Of course in that question you have assumed that the company is capitalized solely through serial notes, that it has not built up cash sufficient to pay off these notes, and that there is no cash available over the period for that purpose.

When a company that has been serving natural gas has to go back to artificial gas, the probabilities are from past experience that their cost of producing heating units in the form of gas will increase. As to whether that would result in a rate increase, I think the rate of return at that time would have to be determined in the light of the then conditions. You ask would the same rate of return be required, assuming all of the facts to be equal except in the first case it was supplying natural gas, and later it supplies artificial gas. There are so many facts to be considered in each individual case that I would not express any horseback opinion. In the absence of specific facts dealing with the detailed phases of the operations of the company under each situation, it is not possible for me to give an intelligent answer to the type of question you have just addressed to me. It seems to me that you are asking me to state offhand here what might be a proper rate of return for a company now serving manufactured gas, and at the same time to state what I considered a proper rate of return for a company now distributing natural gas. I am not prepared to state without knowing more facts just what the rate of return should be in each case. I have reference to facts about the particular company, where it operates, the character of the territory.

1278 I know that Peoples Gas Light & Coke Company is serving a mixture of natural and artificial gas. If that company should cease serving a mixture of natural and artificial gas and started serving straight artificial gas it is impossible to say whether or not they would be entitled to an increase in rates although I don't believe that the rate of return would be greatly different. I have not given consideration in this case as to what an adequate

rate of return for that company would be under present conditions. Far less have I given consideration to what its rate of return would be if it went back to artificial gas. Before responding to that question I would want to give detailed consideration to the facts. It is possible for me to generalize on risks, but it is impossible for me to state what an adequate rate of return for a particular company would be under different conditions. You did not ask me to state the amount of the return; you asked me to give the difference and that means, of course, that I have got to know what one would be in comparison with what the other would be in order to state the difference. I have not said that there would definitely be a difference in the rate of return. There might be.

Cross-Examination by Mr. Slaff.

I have testified as an expert in only a few cases. I have never considered that I am trying to break into the field of expert testimony. Our firm was established in 1937, and since then we have been retained in four or five cases. I would not say that we are trying to build up a status as an expert in this field. If cross-examination in these cases takes as long as in this one I am perhaps inclined to give it up. I am not discouraged with what my testimony turned out to be under cross-examination; but I have been kept away from my business a week in this case and I am afraid it will go to the dogs unless I can stay with it more. I don't think I will be adequately compensated for my time but I think I will be compensated. I have no doubt about it. As to the basis of my compensation, in response to a request of the company as to whether I might be available to testify in this case, I wrote a letter to Mr. Hedrick in which I outlined the things that I would propose to do and the investigation that I would propose to make. In that letter I said that our compensation would be on the basis of $100 a day for each partner or for the partner who worked on the case; and in my opinion based on our past experience, that our fee would be not in excess of $2500. The actual time I have spent in this case is very much more than I expected to be required to do, and I feel that I am limited to $2500, and that is why I said that I did not think I would be adequately compensated. I have sent the defendants no bill yet. I do not mean to

say that our bill will not exceed $2500 in this case. I don't think I will bill the company for my full time as set out in my letter to Mr. Hedrick, of $100 a day. I think I have a conscience about that, and I will be substantially influenced in presenting that bill by the fact that I gave them an estimate of $2500. As to whether the company requested me to come down here this week while the other witnesses were testifying, I think we discussed it generally among ourselves, and I am not sure whether the company requested me or Judge Morgan requested me, or whether I took it for granted that I would have to be here for cross-examination. I understand in these cases that the witnesses must be available on call. If Mr. Emery's cross-examination had lasted only half a day, I had to be here Monday noon. I was not advised by the company or its officials that they had been advised that I would not be required here until after Monday.

1279 Since I was in the Brooklyn Rapid Transit Franchise Tax Case and cross-examined in that case I have not testified that I went from the General Electric Company to the Central Hudson Gas and Electric Company in the capacity of an executive of the Commercial Department of that company. I think I was an executive in the Commercial Department of the Central Hudson Gas and Electric Corporation. I was with the General Commercial Manager as the Manager of the Lighting Division of the Commercial Department.

I testified in the Brooklyn Rapid Transit Franchise Tax Case that I went to Central Hudson in the capacity of executive of the Commercial Department of that company. I have never indicated anywhere that I was the General Commercial Manager of the company. I now say that I was one of the executives of the Commercial Department of that company.

The First Boston Corporation is a large investment banking organization with headquarters in New York. They do a large underwriting business. We made an investigation and report for that company in connection with the issuance and sale of a large issue of public utility bonds—those of Gatineau Power Company. I don't remember ever mentioning the First Boston Corporation in connection with an issue of the Gatineau Company in my prior testimony. I think I may have mentioned it in another case and you may have gotten it from there. I tes-

tified in some other case that I did a job for the First Boston Corporation in connection with an issue of Gatineau Power. I testified under examination by Mr. Dyckman in the Brooklyn Union case, as quoted by you, to the effect that we had recently made an investigation and report for a large banking group headed by the First Boston Corporation in connection with an issue and sale of $62,500,000 of mortgage bonds of the Gatineau Power Company. (Motion to strike testimony with respect to First Boston Company by Company Counsel denied.) There is nothing secret or hidden about that issue or about the fact that the First Boston Corporation headed the underwriting group except to the extent that our report is a confidential document between that corporation and ourselves. The Gatineau Power Company is a utility company which has properties in the provinces of Ontario, Quebec and New Brunswick in the Dominion of Canada. It is a hydroelectric property and does not operate any gas properties.

My understanding is that Ralph Davis, whom I mentioned yesterday, is a firm, although I have no knowledge whatever of the partners, or really whether there are any partners. The organization of Ralph Davis, Inc., or whatever the title is, is a well known firm of geologists, or Mr. Davis has a large number of employees who work with him and prepare reports on geological questions, particularly with reference to the natural gas industry. They have prepared reports for the Equitable. In many cases where securities are being sold by a firm to an institutional buyer, the latter will denominate a firm from which it wishes a report on the question of gas supply. In most of those cases the cost of the preparation of the report is borne by the company who is selling the securities, but the report is primarily prepared for the buyer of the securities. Under such circumstances the firm of geologists would have the status in its field of an independent counsel giving an opinion as to the legal validity of the issue. I think Ralph Davis prepared a report which was received by the Equitable when we purchased the $4,000,000 of bonds of the Northern Natural Gas Company.

I think the president of defendants is W. A. Jones. Outside of being president of defendants he is one of the chief executives of the Cities Service Company.

I testified yesterday that I had conferred with Judge Morgan on the scope of my testimony. I did not discuss with him the exhibits that were to be put in by other witnesses. There was no discussion whatever of those exhibits. I did not inquire about the general scope of the exhibits that were to be put in by the witnesses. I was given a free hand in the preparation of my exhibits and my testimony. I was not directed by Judge Morgan as to the type of exhibit that I was to prepare in connection with my testimony. It was a matter of no significance to me that my exhibits might overlap with the exhibits of the other witnesses. I never gave that a thought and it did not occur to me. I would like to make it clear, so that there is no misunderstanding, that a few days, three or four days, before I came down to testify on direct, I conferred with Judge Morgan and showed him
the information contained in this document, my ex-
1280 hibit on the rate of return, and showed him those
papers at that time. I knew the names of the three other witnesses who were to testify on rate of return. I knew their positions in their respective fields. I knew they all lived in New York. I knew that they too would probably produce exhibits on their testimony though I had no knowledge of that fact and gave no consideration to it. I did not care if my exhibit turned out to be an identical exhibit with that of one of the other witnesses. I feel that in my work in this field my reputation and future depends upon my independence and the character of the work which I produce independently of anybody else. I would not care as to whether my exhibit exactly duplicated somebody else's exhibit.

It is my habit in the office to read the S. E. C. releases. I try to keep up with the holding company releases, particularly those releases containing findings and opinions. An S. E. C. release is a mimeographed release to the general public stating the action of the Commission with respect to the particular application before it, and includes in most cases an opinion and findings and order in the case, or a statement of the hearing proposed to be set down, or a compilation of statistics which are regularly released by the Commission. I think that generally covers the field of releases. I am on the S. E. C. mailing list and its releases come regularly to my office. I try my best to keep up with these releases and I think that

the informed investor tries to keep up with them, either himself or through some agent. And I think he would naturally read such releases as affect an investment or a potential investment. If he found anything in the release that he deemed important and wanted further information on, he would go back of the release and into the S. E. C. files and records so far as they are available to the public, if it was of sufficient importance to him. I think I have done that.

I testified with respect to my position at the Equitable, which was Engineer Treasurer's office. The ultimate responsibility for the investment of the funds of the Equitable did not rest on me. It was my duty to make reports and recommendations after investigation. I made my recommendations to the Treasurer and I think to the Finance Committee. I have made reports directly to the Finance Committee other than through the Treasurer. I have made many such reports. Reports to the Finance Committee would usually be verbal reports rather than the formal 50, 60 or 70 page written report which would be prepared for the Treasurer and the files of the Investment Department. When the Treasurer got my formal report he went over it; probably conferred with me about it; then added whatever he had to say, if anything, to it, and passed it on to the Finance Committee. He would recommend separately or he would adopt my recommendation, and we might purchase a couple of million dollars worth of bonds on that recommendation. The Finance Committee would consider it and if they wanted any more information from me or advice from me they would call me in. It was the Finance Committee which decided whether the investment was to be made or not. The law puts that responsibility upon them.

I have said that I went on field trips from time to time. I have many times been out on field trips investigating three or four companies where I have been away from New York thirty or sixty days. Yes, I would be riding the circuit, as it were, on a 30 or 60-day trip. We would go down and look at one company for a couple of days, three or four days, and then go to the next and repeat the process until returning to New York. The trip itself would be of relatively short duration, three or four or

five or six or seven days would usually suffice for the
1281 ordinary company, during which time I would view the physical property, visit the particular communi-

ties served, discuss with local people whatever I wanted to discuss, collect statistics or order the statistics which I wished, and then I would come back to New York and spend one or two or three or four weeks in writing up the results of my investigation. I think those three or four days or so that I would spend out in the field with a particular company are called horseback appraisals.

(Commission Counsel calls the Examiner's attention to the fact that upon request of members of the Commission's staff Mr. F. C. Hamilton, a witness in this proceeding, refused to permit photostating of the working papers by the Federal Power Commission for use in cross-examination on Exhibit No. 125 and the testimony of Mr. Willard in connection with that exhibit. The working papers were subsequently furnished by the Company.)

Referring to your illustration, I could go out and buy a building personally as an investment. There might be a variety of reasons why I would not want to do that. Because of my personal obligations in connection with other business, that particular building might be subjected to such liabilities by my creditors. Also, the creditors arising out of my ownership of the building might satisfy my obligation to them out of other property. To meet that situation I might organize a corporation and have it purchase the building. Under such circumstances I could advance all of the money necessary for the purchase of the building to the corporation, receive from that corporation all of the stock that it issues, and have the corporation use the money and buy the building. I might have the corporation issue to me 50 per cent of my advances in the form of bonds and receive stock for the remaining 50 per cent. That would not be less risky to me than the first method. I do not see that there is any particular difference in that set of facts than if I issued stock for all of it, because I own all of its securities. If there were other creditors there might be some advantage in issuing a part of the securities in the form of bonds secured by a first mortgage on the building, but we are getting into an involved calculation here. Creditors are of all kinds, and if we had this building organized in that way with the company owning it, it all depends on what kind of creditors they are. You might have creditors whose position was secured by the assignment of a certain per-

centage of the rents. My position would be safer so far as any creditors of the corporation were concerned, if I have a mortgage on the building representing 50 per cent of my investment and only the balance represented by stock than it would be if I had no mortgage on the building. Also, I could have the corporation issue 100 per cent of my advances in the form of bonds secured by mortgage and receive in addition one share of stock of a nominal value. My position in that case would be the most secure of all the situations that have been mentioned here. I would be entitled to first call on the earnings of that enterprise to the extent of the interest on the bonds and additional trade creditors would have to follow after the payment on the bonds; but of course it must be remembered that in the practical world I am not so sure that that would work, because I would not as the owner of that enterprise fail to see that the creditors were paid because they might put the building into receivership. The investor's first concern is about his own investment and not somebody else's investment, but when we talk about things like that, we talk about clear-cut situations where bonds are not put out to the extent of 100 per cent of the property in the ordinary course. They cannot generally be sold to the public on those terms. In the third situation, where I have a mortgage for 100 per cent of my advances to the corporation, I would have first call on the earnings of the building. I also have a first lien on the proceeds of the sale of the building ahead of all of the creditors.

I stated in my direct testimony that a substantial hazard in the investor's mind in connection with these companies was the possibility of a failure of supply, and at this time I cannot think of one which is of greater importance. I said that I assumed that the field would last at least 15 years. I did not give any particular concern to whether it would last longer than 15 years. I was satisfied, or at least I assumed, that the field would last at least 15 years. I did not assume that it would last longer than that. I have made no independent

1282 check of the probable future life of that field. I have made the same kind of a check in this instance that I would have made had I been with the Equitable Life Assurance Society and responsible for the recommendation for the purchase of bonds. Yes, an informed

investor about to make an investment would make every feasible check with respect to the probable future life of the source of supply of a company such as defendants'. Investment bankers would, for example, hire the Ralph Davis firm that you spoke of in order to get an opinion which would be made available to investors. That would also be done by an informed investor such as the Equitable Life Assurance Society. That would be done by an informed investor and I have made such an investigation. I testified this morning that such an investor would make that kind of an investigation and that it has been done by Equitable and by other investors.

I hesitate to denominate individual things that an individual investor would do. I, myself, would read all the pertinent S. E. C. releases that I could find. I look at everything that I think of that would be pertinent, and an informed investor would either do it himself or through someone else. If he found anything in a release by the S. E. C. of sufficient importance to justify it, I assume he might proceed further with his investigation. As a matter of fact, one of the chief functions of that Commission is to make available to investors information concerning those about to offer issues of securities for sale to the public.

I am aware of the fact that the Public Service of Colorado has been before the S. E. C. recently. A big issue is involved there. That company's declaration was allowed by the S. E. C. to become effective subject, however, to final decision on the price and terms of sale. I would not say that was a normal route pursued in most orders. I think you know that in most declarations the price is known at the time; but in this particular one it was unusual to allow it to become effective subject to the final approval of the price and terms. Ordinarily, these declarations would become effective under certain terms. The procedure to which you refer is a two-part thing. Usually it is a one part thing. I kept up with this financing of the Public Service of Colorado to the extent that was possible. I read the Commission release or opinion from cover to cover. (Objection by Company Counsel overruled.) It includes some fifty pages or more. I undoubtedly read in that release the statement you have just read therefrom to the effect—"The gas property is a coal gas manufacturing plant. Declarant is presently

serving natural gas supplied by the Amarillo field with estimated requirements to last for the next 25 years on the basis of 1937 withdrawals." An informed investor contemplating an investment in this company might well read that statement if it were available to him before he made his investment. He might or he might not normally attempt to seek from the S. E. C. the information on which the Commission based that statement. This issue has been before the S. E. C. for a long time but I think you might say that it has nothing whatever to do with the gas reserves.

Yes, the question of financing by the Public Service of Colorado has been before the S. E. C. since the beginning of 1939 or earlier. The questions involved before the S. E. C., as I understand it, were not these general problems, but the questions as to the relative proportion of the bonds, debentures, and common stock of the financing, rather than anything to do with any investigation or study of the gas reserves. An A-2 statement is a registration statement filed under the Securities Act of 1933 where the securities are being distributed and sold to the general public. The declaration and the accompanying A-2 statement under the 1933 Act contained a letter opinion by Mr. Davis with respect to the gas available to the Public Service Company of Colorado. I don't remember all of the details of the letter, but since the Public Service of Colorado purchases its gas from Colorado Interstate Gas Company, my memory is that Mr. Davis had to go back to the latter and its gas supply, which is from the Canadian River Gas Company. The last named company in turn had substantial acreage in the Panhandle field.

1283 Prior to 1928, the Public Service Company of Colorado operated an artificial gas system in the City of Denver. Some time shortly after that, a natural gas line was extended to Denver and the company's system was converted from an artificial gas system to a natural gas system.

(Company Counsel stated: "Ralph Davis does not work for defendants. We retained him in a special manner last year, but he does not work for the Company. We never have had him in Court for the purpose of computing any estimates of reserves in the Panhandle field. If they want his statement here, we ask them to bring him

here as a witness and in fairness we ask that all testimony concerning what he said be excluded until they do that.")

Before I could answer your question as to whether or not an informed investor, seeking the reference to the Ralph Davis report in that release, would make an effort to find out what was in back of that estimate or that statement respecting the life of the field, I would have to have that statement before me and read Ralph Davis' statement. If I were making up my mind about an investment in a natural gas company producing and transmitting out of the Panhandle field, upon reading this statement from the release, I would want more information. I might have obtained the report of Ralph Davis and found out whether there was anything of interest in there that might be of value to me in making up my mind as to the investment that I was going to make. No, it would not have been a difficult job to get that report of Ralph Davis. I could have written down to the S. E. C. and had them send me a photostatic copy or I could have gotten it out of the A-2 filed by the company. The A-2 is the registration statement.

(At this point the counsel for the Federal Power Commission produced a two-page photostat which he described as a photostatic copy of pages 5 and 6 of the registration statement of the Public Service Company of Colorado filed with the S. E. C. and asked that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 155 for identification. EXHIBIT 155 was offered in evidence and company counsel made no point of the fact that the document was not authenticated. Company Counsel object to document on the ground it was hearsay and incompleted.)

I have no reason to doubt that that document is a copy of an authentic statement of the Davis organization. I do not know whether the statement is authentic or not. I will certainly say that it is my belief that that is a statement of the Ralph Davis organization.

The Ralph Davis organization is a firm of engineers who, according to my understanding, have specialized in petroleum and gas work. I do not think I have ever testified—in fact I am sure that I have never testified—that they were the outstanding or an outstanding firm. They are sufficiently outstanding that the Equitable em-

ploys them to get their judgment as to the reserves of a gas field. The Equitable does not accept their statements and amortize their bonds over the estimated life as brought in by Mr. Davis as a general proposition. Davis' statement was satisfactory in certain cases to us at the Equitable.

It appears on page 57 of the A-2 which you here show me, that Mr. Alton Jones was a director and vice president of the Public Service Company of Colorado during the period from September 30, 1938 up to July 13, 1939. A note shows that he resigned as director and officer on July 13, 1939. I do not have any doubt that that document is the Public Service of Colorado A-2.

The form of the document submitted to me is in accordance with the usual form of these A-2 statements and prospectuses. I have received A-2 statements from the S. E. C in the regular course of my business, but I cannot say that any A-2 I have received is the same as this A-2. These documents are tentative. There are all kinds of blanks in the prospectus. They don't become effective until the blanks are filled in. (Examiner refuses to permit testimony to proceed over objections of counsel for the two commissions based upon documents from the S. E. C. which are not duly certified by the S. E. C.)

Redirect Examination by Mr. Morgan.

I have stated here that in making my study and in arriving at my judgment of the proper rate of return, I assumed a life of at least 15 years. I have assumed
1284 that the gas supply available to this company will last at least 15 years. I have made no assumptions that it would last any longer. The assumption that I have made is that the supply will be available for at least 15 years. If it turns out that the supply lasts 20 years, my opinion at this time as to the proper rate for this company would not be different than the 8 per cent to which I testified. If the Commission finds that the life is longer than 20 years, that finding would not change my opinion as to the proper rate of return.

1285 ROBERT H. DELAFIELD, a witness for defendants, called for cross-examination, testified:

(October 28, 1939.)

Cross-Examination by Mr. Booth.

I was not advised by counsel for the company to bring such working papers as I had used in connection with the study I had made on the subject of rate of return for defendants. Mr. Slaff asked me to bring the working papers on one subject. I will be glad to supply the others; but I happen to have no other working papers except the pencil figures from which the exhibit was copied. You are welcome to anything I have. My Exhibit 147 is in three parts. I did not understand that you wanted pencil sheets from which it was taken. I will be very glad to supply photostats of those. You are correct in your statement that my working papers in this case consist of working papers underlying the computations shown in Exhibit 147. You see, for this exhibit there are in reality no working papers except pencil sheets which I will be glad to give you, but they are identical with the exhibit itself. If you wish those I will bring them. There is one working paper of which I have a photostat here which is in reality the detail of the makeup of the capitalization study which I understood Mr. Slaff to ask me for. I brought it in typewritten form, and again, if you wish the penciled paper, I will be glad to furnish it. This is all there is. Of course there are notes made on pieces of paper and computations and things of that sort which are destroyed. I am embarrassed that through some slip I only brought one copy of this photostat; and I ought to have those photostated and as many more copies as you want can be readily made.

As shown by the record at page 5116, I testified that I had studied the profits of businesses in other countries. I would say that that constituted an important part of the study that I made on the subject of rate of return in this case; I don't know that I would say the major part. This study of the earnings of businesses in other countries is just some of the general knowledge that we accumulate from time to time in connection with our business. No special study was made of the earnings of businesses in other countries in connection with the study we made on the subject of rate of return in this case. If you were to ask me

to tell you what the earnings of public utility corporations were in half a dozen European countries in 1938, I would not be able to answer, nor would I be able to answer should you ask similar questions with respect to the earnings of industrial corporations in any of the European countries at any time.

You are not quite right in stating that at page 5118 I compared the natural gas industry with the grocery industry. I mentioned the grocery store to show that if you do not permit amortization in an extractive industry it is the same thing as telling the owner of the grocery store that when he finally closes up he cannot have the benefit of the price of the stock of the store. That was the purpose of that example. It was not my intent to compare the risk of defendants with that of the grocery business. I do not now suggest that their risks are similar to those of the grocery business. I do not intend to compare them on the basis of risk. As just stated, the sole purpose of mentioning the grocery store was to show the inequity of omitting consideration of amortization from a gas company operation. To my knowledge there have been no suggestions made that in determining the rates of the companies
1286 under consideration no provision for amortization of investment should be made. I know that the question of amortization is in this case. I do not know what defendants have set up on their books annually as amounts for amortization. I am not familiar with the provisions for amortization which have been made by the defendants in the exhibits which have been submitted in this case so far as future operations are concerned. Prior to the time I testified on direct examination, I did not read the testimony of Mr. Floyd Brown or the testimony of Mr. Claude Brown, or the testimony of the company's witnesses on the life of the reserves. I did not read any of the testimony. I have seen some of the exhibits but they made little or no impression on me and I think I am safe in saying that I made no study of any of them.

I stated on direct examination that the rate of return was made up of two elements, pure interest and risk premium. Later on cross-examination my testimony, I think, was to the effect that you cannot fix pure interest based on the measures I have used. It might well be between—I think I said 2.75 and 3 per cent, in which case the risk premium would be 5 per cent in my calculation. I have my testimony on direct here before me. There are no mate-

rial changes I wish to make in that testimony. There are a few very peculiar and somewhat amusing instances of a confusion of words which I corrected and which I will return to the reporter or give to you. I do not think there is anything which will confuse the cross-examination except on one page, and I cannot locate it now. I have marked it with a pencil.

I testified as appears on page 5175 of the record that I would not necessarily have to divide the pure interest and risk premium 3 and 5, although these are approximately the figures that I did have in mind in coming to my conclusion as to the proper rate of return, 2¾ and 5¼ roughly. I would like to amplify that statement at this point. The difficulty that I am under is that the form of your questions indicate that I fixed a figure, and I think that from the testimony leading up to my statement it is very clear, particularly that with reference to pure interest, that it is impossible to make these figures exactly definite. I do not want the questioning now to make them any more definite than I made them in my direct testimony. I stated there that in my conclusion I did not specifically allocate 2¾ or 3 per cent as pure interest and the rest remaining as risk premium. I still stand by the testimony that I gave on page 5175 of the record. It would not alter my conclusions in any way if it appeared that Professor Dorau disagreed with the conclusion stated on page 5175. I would not change my testimony merely because he might not agree with me.

In my direct testimony, I indicated that in arriving at the amount that I thought might be allocated to pure interest, a pretty good index of that was the return on the total bond investments of the savings banks in New York in 1938. I stated the amount invested there was approximately $2,350,000,000, but it would be impossible to state what bonds made up those investments. That data is available but there are probably thousands of issues. The purpose of using that figure is that in New York State there is one of the most rigid laws governing the investments of savings banks; and the Savings Banks Association, also the New York State Banking Association, annually report the amount of bonds held by all of the savings banks and the return or yield on those bonds. This is taken from one or the other of these reports. The sole purpose is to show the yield on a huge diversified fund in conservative securities. The information as to what bonds make up that investment is available. It is a printed book as large as the

one I am holding up here. It is available and must be here in Washington. There are two of these reports. This particular figure was taken from the report issued by the New York State Banking Association, and that I can and
1287 will gladly furnish. That is a small printed document. The book that I had in mind is the annual report of the savings banks operations for the particular year.

The law in New York which makes bonds legal investments for savings banks, stated in the broadest way, includes, among those eligible, United States Government bonds, bonds, I think, of all of the States in the Union—there may be an exception set forth in a proviso in the law that if there has been a default within a certain period, that bonds of the defaulting State are excluded—the bonds of municipalities within the United States with certain qualifications as to default, and so forth. The bonds of certain railways are included but are qualified, though I don't remember all of the qualifications at the moment. Also included are the bonds of certain utility companies. Until recent years, there was a provision that disbarred natural gas bonds. I think at the last session of the Legislature that was modified. Formerly they had to be bonds of electric utilities or artificial gas utilities. I think the law was modified so that a company distributing natural gas which it did not produce could have bonds which were legal. In the old days, no bonds of a company in any way in the natural gas business were admissible. Real estate bonds are included with, I think, the proviso that a savings bank cannot own part of a mortgage; they must own the entire issue. That again may have been changed in recent years. That covers the field in general. The $2,350,000,000 invested in securities by all of the savings banks of New York would not include any real estate bonds. It would include substantial quantities of Government, municipal, utility and railroad bonds. I think the amount of railroad and utility bonds would be substantial. I cannot state the per cent. As to the natural gas securities, if I did not make it clear, I think the production companies were excluded.

In my direct testimony in referring to the S. E. C. as an agency for giving the public information respecting utilities, I testified that the whole purpose of the Act creating that Commission is to inform the public as to investments and prevent them from looking only at one thing and being uninformed. Before the passage of the Securities Act of

1933, the information available to investors in general was the so-called circular, a one or two or maybe six-page document describing the business and the securities. Under the Securities Act, issuing companies file with the S. E. C. a registration statement such as that discussed yesterday, with a large number of exhibits all of which are prescribed by law and regulation; and in addition to that, a company has to make available to all purchasers of securities a prospectus which in the case of many companies is a document of anywhere from 25 to 150 pages of information about the issuing company. That is what I meant specifically that might be available through that agency. That is intended to give the investors substantial, accurate, reliable information bearing upon the securities about to be issued by a given company. I am familiar with the preparation of these statements. The issuer has a serious obligation to provide accurate and reliable data.

As appears on page 5152 of the record, I was questioned about the natural gas industry as compared with other industries and as to whether or not it is in the formative period or otherwise. In some respects the natural gas industry is a very old industry. There were references to natural gas that I can think of over 2,000 years ago. However, there are elements in the natural gas industry that have only developed within the past 15 years, very important phases that have changed it materially. I would not say unqualifiedly that the natural gas industry is a well developed and well established industry at the pres-
1288 ent time. There have been some unusual developments in the past five years. The thing that flashes first into my mind is the transmission of gas under very high pressures. I believe the highest pressure line was built within the past two years. The pressures I had in mind are 1500 to 1800 pounds. That is a line that belongs to, I believe, a subsidiary of the Standard Oil Company of New Jersey, and runs north and south between the fields in southern New York and northern central New Jersey. It is a new line. I am under the impression that it is an 18-inch line. I am not absolutely positive. It is about 120 miles long.

There is another high pressure line that also has been built within the last year or two, if my recollection serves me right, and that is a line built by a Standard Oil subsidiary from a point near Charleston, West Virginia to a point south of Pittsburgh. That is a high pressure line

which I think is a smaller line in diameter, and is constructed to operate at 1,000 or 1,200 pounds. I am afraid that my memory of those figures may not be absolutely exact. That line is about 100 miles long.

There has been a great deal of technical improvement, particularly from an industrial standpoint in gas combustion in the development of high heat furnaces. There has also been improvement both from an appearance standpoint and an efficiency standpoint in household appliances. One of the most important developments that occurred in the five-year period under discussion is the development of air cooled gas refrigerators. The last two mentioned improvements tend to assist natural gas distributing companies or artificial gas distributing companies to sell their product.

The only other development in the matter of transmission is the improvement in compressor engines, which would naturally go with the higher pressures. The transmission business is fundamentally a question of pipe and engines, and you are pretty much restricted to that field for changes. Your question as to whether or not the natural gas transmission and production industry has reached a well developed or well established stage involves too broad a field for me to answer it categorically. The natural gas production and transmission industry has been in commercial operation for about 40 years. Those small wells up east of Cleveland between Cleveland and Buffalo, some of them were connected to pipelines in the 80's. The first natural gas plant in this country that I know of was very small and started in the 60's or about that time. In some respects this industry has shown very remarkable developments in the past 40 years; but if you compare it with, for example, the electric industry it would be my opinion that it has lagged.

The total annual revenues from the sale of natural gas would approximate several hundred million dollars. I should say that there are several hundred companies engaged in that business. Natural gas is produced or sold in approximately 29 states in the Union. I think that is a correct statement. The production or sale may not be substantial in some states but I think it is approximately correct. A great many of these states, however, have been reached within the last ten years in the pipeline development of that period. There has been a period of great pipeline development since 1928. Natural gas is sold in many

of the principal cities of the country. Natural or mixed gas is sold and used at Chicago, Minneapolis, St. Louis, Detroit, San Francisco, Atlanta, Memphis, Dallas, Fort Worth; I can mention also Fort Wayne, Indiana; there are others. I do not know approximately the investment in the industry but it would run into many hundreds of
1289 millions of dollars. It is not a new industry but it has been characterized by tremendous growth in the past ten years, and I am a little afraid to emphasize its stability in view particularly of the early history of that 10-year period. I hope it may show further development in the next few years. I don't want to pick on words, but I do not think that in the light of the facts we have been discussing here that it can be said without qualification that the natural gas business is a well developed, well established industry. I do not consider the aviation industry as yet well established. I cannot feel that the natural gas industry is well established although it covers a large territory and is of service to an enormous number of people. Its history, particularly within the past 15 years, especially from a financial standpoint, indicates anything but stability and anything but establishment.

I testified on direct examination that the pipeline industry "is consequently at the mercy of the seller of gas who is only interested in this company as a means of getting that material. It is in a very weak position where it can not set up a type of rate, for example a retail rate, which might encourage the type of business which this company may need at a given time. That is a great risk." I considered that as one of the risks in arriving at the rate of return for these companies. In applying that observation, I had a particular thing in mind. The househeating rate in Chicago seems to me to be not necessarily for that situation high, but relatively high to attract a large volume of househeating business, and the househeating business comes in comparatively large volumes at given rates. I am not in position to say what rate. The rate in Chicago I believe is 7 cents a therm or 70 cents a thousand, rated on the B.t.u. of gas, or in that range. The rates over the country for similar service may be nearer to 50 cents. Sometimes the 50-cent-per-thousand rate which does not specify the B.t.u. content, might compare with a different rate at a lower B.t.u. content.

The question is not one of the rates of the pipeline company because the rates and volume of sales in the language

of the industry depend on the kinds of gas. The "kind of gas" does not mean the different gases chemically but means different uses for the same gas. Gas is more valuable for cooking than it is for boiler fuel; and if a company can increase the use of the most valuable kind of gas that it sells, it should work to the benefit of that company and its supplier. It may not be in any sense a question of the rate between the supplier and the ultimate distributor. I think the price which Peoples Gas Light & Coke Company, for instance, pays for natural gas is a very important element in its operating expenses. It might, but it does not necessarily, follow that a change in the gate rate would enable the distributing company to change its househeating rate. It may not be necessary to change the price paid by the distributor to enable it to change its househeating rate.

If I said that defendants are "at the mercy of the seller of gas who is only interested in this company as a means of getting that material", I made a very careless choice of words. I know, of course, and knew at that time, that the Peoples Gas Light & Coke Company has an investment in this company. I would not say their investment in this company is substantial in relation to their investment in distribution property. The three distributing companies own a little more than 26 per cent of the stock of defendants. That is a substantial interest in these companies, but the question is not the substantial amount of this investment but the relation of this investment to the investment in their own property. That is the important thing. I think my former testimony would more nearly express what I intended to say had I used the word "principal" instead of "only".

1290 *Questions by the Examiner.*

Very roughly, taking the three distributing companies, I should say that their investment was over $200,000,000. I would like to be corrected if this is not right; and I should say that their investment in this project was approximately 15 or 18 or maybe 20 million dollars; so you are comparing the risk on the $200,000,000 with the risk on about $20,000,000, and there is no question of the importance to that management as to which end of the business makes money. I presume, of course, they hope to have their investment in defendants profitable. The

three distributing companies are Peoples Gas Light & Coke Company, Western United Gas Company, and Public Service Company of Northern Illinois. It is those three companies which together own this 26 per cent plus of defendants securities.

Cross-Examination by Mr. Booth Resumed.

I testified on direct examination that "there has been a drop per customer of consumption from 78,000 feet per annum to about 58,000 feet per annum", in the Columbia system. That was over a period from 1929 to the end of 1938. That is a big system and it may be that there were some minor changes in the thermal content, but there were no changes, I am sure, that would affect the consumption to any degree. These are residential customers I was talking about. There has been a substantial increase in the total number of customers in the system and of the residential customers too. The statistics I mentioned awhile ago had to do with sales to residential customers including space heating and all other sales to such customers.

Question by the Examiner.

There is a great difference of opinion in the industry as to why this falling off of customer consumption occurs. We have made extensive studies. The principal causes apparently are the change in the mode of life—less cooking—improvement in appliances or more efficient use of the fuel during a larger part of the period, and rigid personal individual economy where fuel in any luxury use would be cut out. Also, there has been encroachment of electric cooking, but personally I do not believe that is a major factor in the per customer use of gas.

Cross-Examination by Mr. Booth Resumed.

There was a big increase in the volume of industrial sales in 1937 when industry was active, but a tremendous contraction in 1938 when industry was bad. Industrial sales load, speaking only of the system with which I am most familiar, almost exactly follows the index of business activity. It has increased sharply in 1939. What I meant to say is that in the Columbia Gas and Electric system

the industrial consumption usually follows a curve parallel to the general industrial production curve such as the Ayres Index, the New York Times index or the Federal Reserve Board index. I am sure I have seen "The Index" published by the New York Trust Company but I would not say that I am familiar with it. I do not know that I have seen the August, 1939 issue.

I am familiar with a study made by the American Gas Association in connection with domestic and other sales of gas, but I don't know whether that is the one you have in mind. I am familiar with the efforts of that association and the leaders of the industry to reverse the decline
1291 in sales per domestic customer. I am familiar with the disclosure that while between 1910 and 1920 the number of American families increased by about 20 per cent, the number of restaurant keepers during the same period increased by more than 50 per cent, the volume of business of commercial laundries advanced about 55 per cent, and the number of servants employed in homes and domestic establishments decreased by about 14 per cent. It is true that the gas industries have made up some of the load which they have lost in the domestic field, but you see what has happened. The principal reason, I think, that the industry is worried about this situation is that we had a sharp decrease in the most valuable and highest priced section of our load; and it is very difficult to make up the net earnings lost from that by sales of less valuable gas, even in enormous quantities.

Questions by the Examiner.

I am generally familiar with the character of industrial business of the companies supplied by defendants. Before I could answer your question as to whether their industrial load fluctuates as does the industrial load of our system—the Columbia—according to the general industrial index, I would have to make a further study. I think in general the industrial gas load of the nation and the country—there are always exceptions—follows any good index of the industrial activity very closely. The reason is that gas is used very largely in heat treating processes, and that the heat treating processes in turn are used in the industries that make up a huge proportion of the country's total industrial activity—automobile parts, tools, steel, glass, ceramics—that type of industry follows right along with

the index of national business activity. As the nation goes so the industrial gas business goes, as a generality.

Cross-Examination by Mr. Booth Resumed.

I testified under direct examination to the effect that there is a further competitive element even under the new Natural Gas Act in that the pipelines are in direct competition with other gas pipeline companies, and that where they simply supply a market and do not have the distribution system, the competitor can lay a line to the edge of that market and does not have to replace a distribution system. I considered that one of the serious risks of defendants in arriving at my conclusion as to the rate of return for these companies.

I stated that I had read the contract between Chicago District Pipeline Company and Natural Gas Pipeline Company and that I was generally familiar with it. I don't think I could recall what provisions I stated I had considered. I think my testimony was that the element of importance was the existence of the contract and not any specific provisions of the contract. I do not know at what price the distributing companies would have to be able to purchase natural gas to make it economically feasible for them to maintain their obligations under that contract. I have made no study of that problem. I have made several investigations of the relationship between the Chicago District Pipeline Company, the Peoples Gas Light & Coke Company and Natural Gas Pipeline Company. This is an operation with which I have been familiar ever since its inception. I do not mean to imply that I have made a study of that relationship within the past year.

I don't remember stating that there have been some new developments of oil in the State of Illinois, but there have been. So far I think the extent of the natural gas development in that area has been negligible. There has been some drilling but I think the results of the drilling have been disappointing to the drillers. Some wells have
1292 been brought in but they are not important. I testified on direct examination in substance that I had considered the risk of this property being reduced in value and use by possible discovery of gas nearer the markets, and that was one of the considerations to which I gave weight in arriving at my judgment of a rate of return. I would like to qualify that by saying, of course, that Illinois

is not the only place where gas could be found near the market. I used that as an example in my answer. It could be found in western Kentucky or eastern Kentucky. Kentucky is one of the largest gas producing states in the Union. The big developments in Kentucky—there were prior developments—took place around 1929 and 1930, the development of the shale formation.

I don't know how much it would cost to build a line from Kentucky to Chicago. The cost is an important factor, of course, but Kentucky is nearer to Chicago than Texas. I don't know how much it would cost approximately. A large volume of gas would have to be available in order for people to put their money into a line from Kentucky to Chicago. At least 150,000,000 cubic feet a day would have to be available. I don't know if that is available in Kentucky now. I think our system could take 150,000,000 cubic feet a day out of Kentucky with our present facilities. I don't think our company would consider building a line to Chicago. We have never considered it that I know of. We have markets of our own but just recently, as an example, a line has been projected from Kentucky to Indianapolis; and I am not sure whether this Commission issued a certificate of convenience and necessity for that purpose. I am not positive of that. Suffice it to say that the line has been projected. If it could be projected to Indianapolis, it could be projected to Chicago, naturally. To the best of my knowledge natural gas is not now sold and used in Indianapolis.

In general, I know what the obligations of the distributing companies are under their contract with defendants, but I am not talking about that. That is not the risk. That is not the question I considered in my determination of the rate of return.

Cross-Examination by Mr. Slaff.

I do not know of any bonds of natural gas transmission companies which are legal in the State of New York. There may be some, but I don't know of any. I don't think that is a legal type of investment. There is more than just the statute; the Banking Department has to pass on the bonds too. I don't know about the Banking Law. You have handed me subsection 13 of section 235 of the Banking Law of the State of New York. This subsection says "bonds of any corporation which at the time of such

investment is incorporated under the laws of the United States or any state thereof or the District of Columbia and transacting the business of supplying electrical energy or artificial gas or natural gas purchased from another corporation and supplied in substitution for or in mixture with artificial gas for light, heat, power and other purposes, or transacting any or all of such business provided at least 75 per cent of the gross operating revenues of any such corporation are derived from such business and not more than 15 per cent of the gross operating expenses are derived from any one kind of business other than supplying electricity or gas or electricity and gas, and provided such corporation is subject to regulation by a public service commission or a public utility commission or other similar regulatory body duly established by the laws of the United States or the states in any of which such corporation operates, subject to the following conditions." The conditions set out are the times earned and lack of defaults, and so forth. Section 235 begins essentially: "The investments legal for savings banks in the State of New York are ....." The Natural Gas Pipeline Company of America purchases its natural gas from another corporation.

1293 Qualifying my answer again with the fact that I am not a lawyer and therefore incompetent to interpret the law, I do not see anything in that section that would disqualify the bonds of Natural Gas Pipeline Company of America; but I do not think that is the way it works. What happens is that if you wish to have a bond ruled legal, I think in the early paragraphs of the law you will see that you submit it to the Banking Department, and these are the standards set up for their judgment. I am discussing now the statutory standards, and according to the statutory standards the bonds of Natural Gas Pipeline Company of America would qualify as a legal investment, assuming that they meet the following qualifications that we have not discussed in detail. I understand that by "following," is meant that which follows in subsection 13. The provision with reference to the corporation being subject to regulation indicates that the legislature felt that regulation added an element of stability to the securities of such corporation. I am quite sure there are no pipeline company bonds that have ever been admitted to savings bank investments under that law. I think that the natural gas paragraphs were added at the last session of the

Legislature. The inference might be drawn that the legislature felt that the industry has reached a stability where it satisfies these very rigid requirements of the State of New York permitting the entrance of natural gas securities into the field of legal investments for investments for savings banks.

Referring to my statement on cross-examination concerning the increase in efficiency of compressor engines which has taken place in the last five years as one of the outstanding developments in the industry, but, as before, not qualifying as an engineer, I may add that the modern engines are much smaller, more compact and capable of developing, as I am advised, higher pressures and holding to greater efficiency in fuel consumption, and so on. I have seen engines that have been in operation 30 or 35 years, and they do not even look like the new modern, I would call, vertical engines. It is my understanding, not as an engineer, that these new type engines operate at higher pressures and more efficiency; and that they are capable of producing the higher pressures is the big point with me. You ask if they can do a better job today cheaper than they could five years ago. It is more a different job. They can pump gas to these very high pressures. That is the point I had in mind when I mentioned it. I presume they must be more efficient. I think it must be that there has been an advance in the art as far as compressor engines are concerned. I don't know of my own knowledge. I cannot say there has been a substantial advance in the art except in relation to the higher pressures.

I am a proponent of the retirement theory, consequently I think obsolescence takes place when the machine comes out. I do not know of any other answer I can make to your question as to how I measure the degree of obsolescence which exists in any industry. I recognize obsolescence as an economic factor and I recognize that any machinery advances toward ultimate, complete obsolescence with time, and when it gets to the point of complete obsolescence it should be retired. The advance of obsolescence or the particular extent to which the machinery has become obsolescent must be measured by comparison with more advanced technology.

I have stated that I hoped the natural gas industry would grow in the the next few years, but as a matter of fact I am seriously worried about some phases of the natural gas business. I cannot say I am counting on it grow-

ing in the future. The best is a hope. I am not very bullish on the natural gas business.

Our system is planning to do some refinancing when and if the S.E.C. approves the plan we have submitted under section 11 of the Holding Company Act, but that is refinancing, not putting new money into it. Naturally somebody is going to have to put up the money for the refunding operation, and it is not going to be the same investors necessarily who now hold the obligations of our sys-
1294 tem. As to whether or not that indicates that we anticipate for the future a continued growth for the natural gas industry, I am going to answer that question very fully to be frank. I handle a great many funds as an individual and trustee and investor. I am so pessimistic on the outlook of the entire utility industry including the natural gas business that to the best of my knowledge, except with one or two funds where there is particular reason for it, I do not own or control a single utility security. Fortunately, I do not have to advise investors on Columbia securities. I do not want to be fractious, but does not the Security Act of 1933 practically forbid me from giving any advice on these securities? I just give the S.E.C. the facts and let them judge. I might very well refund an existing issue of $100,000,000 with a new issue of $100,000,000 and feel perfectly confident that that issue would be repaid at maturity and that the investor would receive his interest throughout, and still not look forward to a brilliant or very bright or expanding future for that business. Certainly, I approved the plans that Columbia is making for its refunding operations. Before such plans are put into final effect they have my complete approval, and before the issue goes on the market I will approve putting that issue on the market. Nevertheless, I cannot say that I more than hope that the natural gas business will show growth and development in the future. It is sufficient of a hope at least so that it does not deter me or my Company from issuing or planning to issue in the near future approximately $100,000,000 of securities, which are in a large part dependent upon revenues from the sale of natural gas.

I have said that the sales of natural gas for industrial purposes followed generally the general business curve. I did not include commercial sales. I think the same situation holds generally true in the electric industry too. That is, the power sales follow the general business curve.

I have testified in various rate cases for our system companies, affiliates and other companies. The Columbia Gas & Electric Corporation system is an integrated public utility system. I think I testified in the Cumberland and Allegheny Gas Company case before the Public Service Commission of West Virginia in December, 1938. I testified in substance that "the minimum return required which would preserve the credit of the Cumberland and Allegheny Gas Company and make it possible for that company to advance in competition with other companies and with unregulated companies would be 8 per cent." The Cumberland and Allegheny Company is a part of this integrated public utility system which is the Columbia system.

I believe I testified in March, 1934 in the Cincinnati rate case before the Public Service Commission of Ohio. I believe that was a gas rate case. The Cincinnati Gas & Electric Company which was involved in that case is one of the Columbia which was involved in that case is one of the Columbia system companies, integrated public utility system. I testified in that case in March, 1934, that in my opinion a rate of return of 10 per cent would be necessary. My testimony in that respect was "Yes, sir, we have made such a study of this gas distribution property, and in my opinion a rate of return of 10 per cent would be necessary. That rate of return is the minimum which I believe would be sufficient to support the company's credit and to enable it to compete in the capital markets for the necessary funds to enable it to perform its duties."

I testified also in October, 1937 before the Public Utilities Commission of Ohio in the matter of the Columbus Gas and Fuel Company. That company was a member of the Columbia system; it is now combined with another company, the Ohio Fuel Gas Company. In October, 1937, I testified in that case that a rate of 8 per cent was the least that a company in this type of business should have in order to be able to finance itself in competition with other companies operating in more or less the same territory and operating businesses which all have similar risks. I may have testified earlier, in January, 1937, in the same case. The record you have before you is in the Federal Gas & Fuel Company case. The City of Columbus was

served some years ago by two companies, the Colum-
1295 bus Gas and Fuel and the Federal Gas and Fuel, both wholly owned subsidiaries of Columbia Gas and Electric Corporation, and both since consolidated in the Ohio Fuel Gas Company. I testified to an 8 per cent rate of return for both of those companies.

I testified in the matter of the Natural Gas Company of West Virginia, the City of Wheeling, before the Public Service Commission of West Virginia, some time in the year 1932. That was a Columbia system company. I believe I testified to a 9½ to 10 per cent rate of return for that company. I originally testified to the 9½ to 10 per cent on my direct testimony in March, 1932 and the cross was the following December.

I, of course, assist generally in the supervision and preparation of testimony in connection with our system when rate cases develop. My testimony is confined to certain subjects such as rate of return. I have very little to do with the valuations. That is an engineering subject, but I ultimately familiarize myself with it and get a general idea. I should say that I always know pretty well in advance of going to the hearing what our staff and myself and all of our officers have decided on as a fair rate base for the company involved. It is extremely difficult to answer your question as to whether or not in any case the fair value at which we have arrived has been less than the plant and property account of the company as stated on the company's books, because in so many of the cases only a segment of the company will come in. My answer must be no, I do not know of any such case; but I am not at all sure that there are not many of them. I could not testify, as a general statement, that the fair value which we have testified to as the best judgment or estimate of the fair value has always or uniformly at least equaled the book figures of the property involved.

In the States of Ohio and West Virginia, which are the only states in which we have had rate cases that I can think of, the general theory is that reproduction cost new less depreciation is the rate base. Under that theory you would be quite apt to come out at less than the book figures. By book figures I mean the net plant and property account. The only fair statement I can make is that there is no relation between the books and the rate base. You can not tie them together. Each one of these cases has the date certain as of which the value is fixed.

The property is then appraised as of that date and the appraisal is supposed to develop the reproduction cost new less the depreciation of the property at that date. I could not say that as a rule the final figure was higher or lower than the book figures. Sometimes it is higher, sometimes it is lower. I think in general it would be apt to be higher; and it would always be apt to be higher in producing companies. The working capital, as a specific item, might be picked out of several places in the books and may not be included in the plant and property account in the books. We, of course, add a separate amount for going concern value. I thought you were only talking about the property account. If everything that we put into the rate base be included, I think that in almost every case it would be higher than the property account on the books would show, because the rate base would include things that are not on the books. I think that the total rate base has always been higher than the amounts reflected by the plant and property account on the books. It always ought to be, in fact. I would expect the rate base to be higher than the plant and property account. I cannot say that it always has been but I would certainly expect it to be. I am not sure as to the relation of the claimed rate base to the gross
1296 plant and property account. I would expect it to be higher, but I am including the whole rate base, the property, working capital, going concern value, cost of financing if we put it in, overhead and everything. It ought to be higher than the gross book value of the property and I would expect it to be. As I said, I am not positive that it always has been.

The rate of return to which I testified in this case was 8 per cent, to be applied to the entire rate base regardless of what the latter was ultimately fixed to be. In other words, there should be, in my opinion, a minimum 8 per cent return on the rate base. Of course I am assuming that the rate base would be fixed at a proper level and not arbitrarily fixed in some other way. I assumed that the Commission would come out with a fair rate and a just rate base. My testimony in all of the cases in which I have testified on the rate of return has been to the same effect. That is true with reference to the Cumberland and Allegheny Gas Company and the other companies. I assume the rate base I believed to be fair in the Cumberland and Allegheny Company rate case was that to which our peo-

ple testified in that case, and that observation applies to the other cases in which I testified on rate of return.

1297 Columbia Gas and Electric Corporation has pending before the Securities and Exchange Commission an application that the issuance of certain securities be held to be in conformity with Section 11 of the Public Utility Holding Company Act. This application was heard in April of the current year, argued before the Commission in June and the decision of the Commission is pending. One of the purposes of Columbia in filing that application as it did under Section 11 and at the time it did was to get a decision from the Securities and Exchange Commission so that it might thereafter be in a position to go ahead with the refunding operation of which I spoke this morning.

We have been and are currently making plans with respect to that refunding operation. Approximately $90,000,000 is involved, that much of the securities will be issued. I have already testified in other hearings and I have no objection to testifying here that we hope to obtain a substantial reduction in the existing interest rate which is 5 per cent, through a change in the form of the securities. The existing securities mature in large sums at only two dates and we have discussed serial maturities and heavy sinking funds which will entirely change the character of the credit with a substantial resultant saving to the corporation. We expect that if these securities are issued they will be purchased by the public. I hope that at the proper time the credit position of the Columbia system will be such that the necessary capital involved in that refunding operation will be forthcoming from the public.

With the qualifications stated at the time, I testified that in my judgment in each of the rate cases we have had in which system companies have been involved, the rate base was at least equal to or greater than the gross plant and property account. I think in the instance of many Columbia system companies the rate base should properly be higher than the book figure for the gross plant and property account of each such company as we have discussed it. There is a particular reason for that. The reason is that many of these companies have been in the natural gas business for practically the entire life of the natural gas industry. Their gas-producing lands in some instances are on their books at figures which are entirely unrelated to their developed value. They were undeveloped lands

bought for $1.00 per acre; and the development and exploration that has taken place in the past 25 or 30 years has entirely changed that value. In some instances, because no development cost was charged into the plant account on the books, revaluations have been made; but in almost all instances those revaluations are separate and I do not include those when I think of the book figures.

I am thinking of the book costs when I say the book figures. When I speak of book figures I mean the plant and property account. I couldn't say that in all cases the rate base for rate making purposes should be at least equal to the book figures in our system. I do not know specifically of any cases in which I say the rate base for rate making purposes should be less than the book figures for the plant and property account for the company. I can't just pick an exception out of the air. I have not considered that problem with reference to nearly all the companies from time to time. I have considered with reference to all of our companies the return we would have to have in order to attract capital and one of the important features in that determination is the rate of return on the base. I have said that in some cases of companies in which I have not testified the rate base should be higher than the book figures for plant and property account.

1298 If you total all the property accounts of all the operating subsidiaries, then I would think that the rate base for the system should be higher than that figure. I just can't be sure. As to some companies in which we haven't had rate cases I don't know. I have no way of knowing the answer to the question you are asking whether it isn't a fair statement of my present judgment that a rate for the system as a whole is equal to the sum of the gross plant and property account of all the utility companies in the System, but I will say this, if it will satisfy the inquiry, that if we could get a fair rate of return under regulation upon the book value of our property, I think we would be very happy and satisfied.

In the case of some companies in our system I think the book costs of plant and property are excessive. An excellent example is the electric property of the Cincinnati Gas and Electric Company. We have never made any claim for a rate base anywhere near the book cost shown by the plant and property account of that company so far as I know. I am not sufficiently familiar with the gas

properties of that company to make a statement. I haven't the figures at my tongue's end.

Using very rough figures I would say that the electric property of that company was on its books at between $110,000,000 and $115,000,000. There are two items of intangibles in there, one of $8,000,000, a revaluation, and one of $15,000,000, which is a questionable value. If you take 23 off 115 you get, I think, $92,000,000; but I think that in discussions with the city the highest figure I have ever heard mentioned for a rate base was in the neighborhood of $85,000,000. I think it was nearer $82,000,000 but I would like to say $85,000,000 because I don't remember definitely.

As to whether there are other companies, I think the same situation is true of the United Fuel Gas Company. I have never testified as to the rate base in any of these cases. Other people in our company testified as to the rate base. In one item alone which they testified to in the United Fuel case there is a difference of approximately $20,000,000 in the value of production property as between the book cost and the figures presented in the rate base testimony. In other words, the rate base claimed was that amount less than the figures reflected by the books.

As to the situation in the system as a whole, I just don't know. I can't remember all those figures. I don't know whether it would be a fair statement to say that these rate bases less than gross plant and property account would be compensated for by rate bases which we consider fair and proper at figures above gross plant and property account. It would be a terrific calculation to try to work that out.

No, sir, I have not testified that in every case in which I have testified as to rate of return the rate base was at least equal to or more than the gross plant and property account. I have pointed out the case of the United Fuel where the rate base claimed was not as high as the gross plant and property account. No, it isn't true as to all other cases. It wasn't true in the Cincinnati case. I am not sure that I can say that it is true in all other cases. At the time Columbus Gas and Fuel Company was merged with the Ohio Fuel Gas Com, any we voluntarily wrote $5,000,000 off the books. It is off the books now. I as-
1299 sume what you want me to do is to relate the book figures of plant and property to the proper rate base. I am just not capable of doing it. I don't believe anybody

in the world could do it. Yes, I am the chief financial officer of this company and of this system, but many of these companies haven't been appraised. I have a very firmly fixed idea as to the rate of return these companies would require on a fair rate base. That is true of each of the companies belonging to our system, but I don't know the fair rate base. Certainly I know that as to some of them the rate base should be higher than the book figures of gross plant and property account.

In a general way I am familiar with the balance sheets and the income statements of Columbia and the various companies making up the Columbia system. You have handed me two documents, the first of which is a printed consolidated balance sheets as of December 31, 1938, which does not give effect to various transactions entered on the books subsequent to December 31, 1938, but which covers transactions as of that date and earlier dates. It contains a reference to note "A" This is the consolidated balance sheet which I believe appears as Exhibit D-A 5 to Columbia Gas & Electric Corporation subsidiaries' U-5-S report. That report covers the bonds registered by the utility companies as required under the 1935 Act.

The second document appears to be a photostatic copy of Exhibit D-B in the same report, which is a consolidated income account for the year ended December 31, 1938. I haven't any doubt that this is a true copy of Exhibit D-B attached to the Columbia U-5-S. I believe I signed the basic papers upon which that Exhibit is based; I would in the ordinary course. I am familiar with these documents.

Referring to the balance sheet, the Amere Gas Utilities Company is a small distribution company in West Virginia with a very small amount of production. The plant account is $858,207.16 and the net operating revenue as of the close of the year ending December 31, 1938 was $21,305. The percent relationship between the net operating revenue and the gross plant and property account is 2.48%.

The Atlantic Seaboard Corporation is a holding company, owning the stocks of three subsidiaries. It also operates a pipeline. Two of the subsidiaries are distribution companies, one is a transmission company and one is the Amere Gas Company. The total gross plant, property and equipment account at the end of 1938 was $8,205,751. The net operating revenues for the same year were $181,644,—a return of approximately 2.21% on the gross plant, property and equipment account.

The Big Marsh Oil Company is really an inactive company, a land holding company. It has some sixty-odd thousands of fixed capital and shows operations at a loss.

The Binghamton Gas Works is a distributing company located at Binghamton, New York, with a gross plant and property account of $3,975,559.84 and net operating revenues of $206,678.03, which is about 5.20 per cent on the gross plant and property account.

1300 The Bracken County Gas Company is a distribution company. It has about $3,600 worth of fixed capital.

The Bridge Gas Company is a very small company owning a river crossing which we lease to outside interests who, unfortunately, have never paid the rent. It has a gross plant and property account of $29,000.

The Central Kentucky Natural Gas Company is a distributing company at Lexington, Kentucky. Its gross plant, property and equipment account for the year 1938 was $2,425,254.32 and its net operating revenue for the same year was $62,973.45, a return of about 2.60% on the gross plant account.

Purely in the interest of saving time, you realize I can't agree to this calculation for it is a dishonest calculation. You are taking gross property, but revenue after depreciation. I don't think that is fair. You either ought to take the net property or the revenue before depreciation. I don't want to tell you how to do it. The fair return, is after provision for depreciation and operating expenses. In saying that this is a dishonest calculation, I mean you are making an improper comparison on the books. The return of an operating utility, which related to rate base gives you the return on rate base for the year, that is after all operating expenses and charges made for depreciation and depletion.

While it is perfectly true that I have testified here today twice that in my opinion many of our bases should be and perhaps some of them would be higher than the book, I want to call particular attention in the interest of saving your time that I have very carefully stated that in my opinion rate base and the book figures are not necessarily related. I am a little at a loss as to the purpose of this.

The Cincinnati Gas and Electric Company is a combination gas and electric company producing electricity and distributing both gas and electricity in and around Cincinnati, Ohio. Its gross plant and property account was

$127,838,314.42 and its net operating revenues for the year 1938 were $5,646,588.87, a return of about 4.42 per cent on the gross plant.

The Cincinnati Gas Transportation Company is a pipeline company bringing gas to Cincinnati from the fields in West Virginia and Kansas. Its plant account is $10,411,301.48 and its net operating revenue for the year 1938, $47,400.75. I am afraid that figure is not indicative, however, because the company has been leased to another company and this figure covers operations for only part of the year, I think. It is only income for the period it operated and I haven't got my facts quite straight.

The Cincinnati, Newport and Covington Railway Company is a street railway operating in towns south of the Ohio River, adjacent to and suburban to Cincinnati. The plant, property and equipment account is $5,212,673.71. It has a net operating revenue of $69,115.67.

The Columbia Engineering Corporation is a subsidiary service company and operates without profit.

The Cumberland and Allegheny Gas Company is a production, transmission and distribution company with a gross plant account of $5,668,758.92, a net operating revenue of $131,862.52, or a return of 2.33 per cent on the gross.

No, it would not be a fair assumption that the plant,
1301 property and equipment account of any one of these companies that we have gone over, or that we may go over in the rest of the balance sheet, for the entire year 1938 is substantially the same as it was as of December 31, 1938. Some of them have had a great deal of construction during the year. You realize in a great many of these companies a lot of the property in the plant account isn't included in your total utility property and isn't in the rate base at all. It is not related to rates or the utility business. In other words, you get inflated figures some times up here in the plant account. That is one of my difficulties in trying to answer your questions honestly and accurately. I can't relate the two items. In answer to your question as to what I could relate that would give you an idea of earnings on property, may I pick out one that I have testified about? Will you go back to the Cincinnati Gas and Electric Company? I think I said that the highest figure I had heard mentioned as an electric rate base was $85,000,000. It also has, figuring roughly, $17,000,000 in gas properties.

Now, relate that to $5,689,000 and we get 5¼ per cent. In getting that percentage, I added $17,000,000 to the $85,000,000.

The Dayton Power and Light is a combination electric producing and distributing company and it distributes gas but does not produce gas. The plant account was $49,216,655.10 and the net operating revenue was $3,416,937.22, or a return of about 6.94%.

The Eastern Pipe Line Company owns a small section of the pipeline which it leases and I am not sure it doesn't lease it for taxes. I don't think it makes any money.

Fayette County Gas Company is a small producer and distributor of natural gas. The plant account was $2,332,776. The operating revenue was $155,597, a net percentage relationship of 6.67 per cent.

Gettysburg Gas Corporation is a distributing company with a fixed capital of $586,331.63, net operating revenues of $14,859.95, or a percentage relationship of 2.53 per cent.

Greensboro Gas Company is a producing and distributing company with some small transmission facilities. The property account was $13,097,522.67. Here there is a substantial amount of revaluation which you have to consider in the rate base. I don't remember the amount but it is a good many millions of dollars. The net revenue was $203,842.68 and the net return 1.56 per cent on the plant and property account. I think the plant and property account should be cut approximately in half, which would double the rate. Our rate of return at this rate would be approximately 3.12.

Hamilton Service Company is an electric company and it does not distribute gas. I think it is purely electric. Its plant and property account was $870,554.55 and it operated at a loss. There was a municipal plant in Hamilton,
1302 Ohio, competing with this plant. Municipal competition is a risk that transmission companies do not have. There are lots of municipal gas plants, distributing gas, lots of them through Ohio. You ask whether defendants have that sort of competition. I have a very strong recollection of a line which was projected by the Secretary of Interior from the Texas fields to northern Ohio within the last year or so. That is the worst kind of competition. It hasn't been built but the threat is there and it is the threat that makes the risk.

This Hamilton Company operated at a loss in 1938 of about $26,000.

Harrison Electric and Water Company is an electric company essentially, with a small water business. Its plant account was $178,744.29, its revenue $18,499.02,—a return of 10.35 per cent. That may be a company where the rate base is higher than the book figures.

The Home Gas Company is a transmission company carrying gas along the southern counties of New York State. Its fixed capital was $2,247,858.73 and its net operating revenue, $218,371.66, a relationship return of 9.7 per cent. We bought that line to lift and use the old pipe at a scrap price and then subsequently used it as a utility. The reproduction value is higher than the book figure, and I think the rate base should be higher. That would be my guess.

Huntington Development and Gas Company produces some gas but it is essentially a gas land-holding company. It could hardly be said to operate in any substantial way. Its property account is $10,308,745.79. I think it would be entirely proper to skip this company at this point.

Indiana Gas Distribution Corporation is a small distributing company with a plant account of $170,570.57, net operating revenues of $23,820.93 and a return relationship of about 13.97 per cent. In that particular case I don't think the rate base should be higher than the book figures.

Keystone Gas Company is a gas distributing company with gross plant figures of $763,041.40, net revenue of $43,215.31 and a return of approximately 5.66 per cent on the gross plant.

Loveland Light and Water Company is an electric company with a plant and property account of $208,311, net operating revenues of $19,166 and a return relationship of 9.20 per cent.

Manufacturers' Gas Company is a producing and distributing natural gas company with a plant and property account of $4,806,255.04, net operating revenue of $100,788.30, and a return on plant and property account of about 2.10 per cent.

Manufacturers' Light and Heat Company is a producing, transmitting and distributing company with a plant and property account of $57,980,865.80, net operating revenue of $822,963.26 and a return relationship of 1.42 per cent of the formal figure. That is a natural gas company.

1303 Miami Development Company is only a real estate company holding real estate for electric operations, with no earnings.

Miami Power Corporation is an electric transmission line, operating under a lease, I think, though I am not positive. Their operations are not indicative.

Michigan Gas Transmission Corporation has gross property figures of $9,260,046.57, operating revenue of $609,105.20 and a relationship return of 6.58 per cent on the plant and property account. That company is engaged in the transmission of natural gas.

Natural Gas Company of West Virginia is a producing, transmitting and distributing company with a plant and property account of $7,934,593.94 and net operating revenue of $67,741.82, or about .85 per cent of the former figure.

Northwestern Ohio Natural Gas Company is a distributing company with a plant account of $4,461,134.97, operating at a loss of $174,000 last year.

The Ohio Fuel Gas Company is a production, transmission and distribution company with a plant account of $107,368,062.94, net operating revenue of $4,569,359.73 and a per cent return of about 4.26.

Pennsylvania Fuel Supply Company is a producing and distributing company which has some minor transmission facilities. It has a plant and property account of $2,788,667, net operating revenue of $35,784, or a return of about 1.28 per cent on the former figure.

Point Pleasant Natural Gas Company is a small natural gas distributing company.

Union Light, Heat and Power Company is an electric distribution company that distributes natural gas also. Its fixed capital was $8,031,235 and its net operating revenue $433,485, which comes to a return of about 5.40 per cent.

United Fuel Gas Company is a producing, transmitting and distributing company with a property account stated on the books of $90,137,451.54. In the case of that company I have said that I think the rate base should be some $20,000,000 or $30,000,000 lower than the gross plant and property account. Let's say $20,000,000. Its net operating revenue was $3,583,991, or a return of about 3.98 per cent on the former figure. If the $20,000,000 be taken off it looks like the return would be about 5.1 per cent.

Virginia Gas Distribution Corporation is a distributing company with a plant and property account of $1,184,485,

net operating revenue of $21,503, or a return of about 1.82 per cent on the former figure.

Virginia Gas Transmission Corporation is a transmission company with a gross plant and property figure of $4,556,210, net operating revenue of $95,143, and a return of about 2.09 per cent.

1304 Warfield Natural Gas Company is a producing company with some transmission facilities. The gross plant and property figures were $13,397,793, the net operating revenues $651,273, or a return of about 4.86 per cent on the former figure.

In each instance where I have stated the gross plant and property figures, those were the amounts as of December 31, 1938, and where I have stated the operating revenues those were the revenues for the year 1938.

For the whole system, the fixed capital plant, property and equipment account aggregates $559,166,379, the total net operating revenues $19,655,196, or a return on the former figure of approximately 3.52 per cent.

The figures for 1937 for the system companies that we have gone over and for the system as a whole were somewhat better than for 1938. The year 1938 was a very bad year. I can't remember the exact difference. It was some millions of dollars. From the 1937 balance sheet which you have handed me, it appears that the consolidated net operating revenue for 1937 was $22,375,000-odd, as against $19,655,000 for 1938. That was the gross corporate income. The balance sheet caption changed between the two years and I can't make a direct comparison to the figures available to me here but I do not think the property change would have been substantial, in any event not substantial enough to affect the relationship and the percentage I will give you. The difference in net operating revenue between the years 1937 and 1938 was approximately $1,272,000, so 1938 net operating revenue was 5.8 per cent less than net operating revenue in 1937. The property and plant account for the two years was substantially the same, or at least sufficiently near the same so that the figures would not be distorted. Applying the increased revenue for 1937, it appears that instead of 3.52 per cent, the approximate overall figure for 1938, the percentage in 1937 would be approximately 3.78.

I have Exhibit 147 before me. I testified at or about page 5134 that "Each one of these average rates, when you come out at the end, may be either cast up from the mean or cast down from the mean. In this instance, it is cast down very

heavily, because there is one very large industry, the packing industry, which has not been particularly prosperous in recent years. That is a large capital industry and consequently if it fell below the middle it would tend to draw the whole average down. On page 3 of this exhibit, you will notice that Armour & Company, with a capital of almost $300,000,000, had an average return of only 3.63 per cent during that period. That would tend to draw the whole average down." That would be offset substantially by the investment in Sears, Roebuck & Company and Montgomery Ward whose capital investments are $238,000,000 and $175,000,000 respectively and who had returns of 11.85 per cent and 10.64 per cent respectively.

I stated in my testimony that defendants would be in competition for capital with the companies represented on this list.

The investors in defendants are: The three distributing companies through the Natural Gas Investment Company; the Standard Oil Company of New Jersey; The Texas Corporation; the Cities Service Company; the Southwestern Development Company, and Columbian Carbon Company. I think that is all. I think you are right in saying that the Southwestern Development Company is owned approximately half and half by Mission Oil and Consolidated Oil.

1305 I don't think I have ever heard of the Cities Service system, The Texas Corporation or the Standard Oil Company of New Jersey investing in the radio receiving sets business, nor have I ever heard of the Southwestern Development Co., the Natural Gas Investment Company, representing the three distributing companies or the Columbian Carbon Company investing in that business. I have never heard of any of these companies investing in the business of making auto body ornaments or the business of making glass blowing machinery. I think you could go through the entire Exhibit 147 and my answer would be pretty uniformly the same. I never heard of any of these companies investing in the candy business or the hair tonic business. I think one of them had quite a substantial investment in the candy business at one time. It was not the purpose of this exhibit to show that the owners of this company were investing in the enterprises listed in this exhibit. I couldn't expect them to and I didn't submit the exhibit for that purpose at all or with that in mind.

It is quite possible that among the companies listed on

this exhibit only 9 companies had as much or more invested capital than have defendants. I don't know what those 9 companies earned. You asked me what the average rate of return was for these companies which in the year 1938 earned more than the average for the whole period of 7.32 per cent. The answer is 8.6 per cent. You asked another question which I have answered with these figures I have submitted on paper to you. I find on going over my figures that I have made an erroneous explanation of an exhibit when I said that two natural gas companies were removed because the figures were not available. As a matter of fact they were removed because they were financed during the years when the figures weren't in any way comparable and two others were substituted.

In connection with another matter I made a calculation of the returns of the 12 largest companies listed on my Exhibit 147 but unfortunately I haven't the result with me. I have not checked your statement that only 3 companies listed on this exhibit have invested capital coming within a range of 33⅓ per cent either way of the invested capital of defendants, but I could readily imagine that such might be the case. I have never made any comparison of the returns of those 3 companies with the returns of defendants for the purposes of this hearing. We have made a great many calculations and we have based them on size and character of business, etc. Of course that is not the purpose of this exhibit. I didn't consider that at all when I put this exhibit in.

The purpose of using an exhibit like this is to show by as broad a field as possible what the returns on that broad field of business are which investors expect to receive and against which they measure the returns on regulated industry. No investor like Cities Service Company is investing in a $368,000 business making radio receiving sets.

My explanation of the reason these companies are investors in defendants, and this explanation is borne out by the history of the ownership of defendants, is that practically speaking these people who are in the oil business are

forced into the gas business which is in a sense a
1306 by-product of the oil business. The reason for that
I attribute to the great risk of the natural gas business. You will notice that there are very few natural gas stocks in the hands of the public. Very few have ever been sold to the public.

No, I never heard of Cities Service or any of these other

investors in defendants investing their money in a $700,000 corporation making overalls. I do not know how many of the companies listed in Exhibit 147 have 10 per cent or less of the capital of defendants. I can perhaps put that in reverse by saying that in one calculation I have here, 24 of the companies, including some of the smallest, represent 78.2 per cent of the capital, that is, the 12 largest, 6 medium sized, and 6 of the very small. These 24 companies represent 78.2 per cent of the entire capitalization of the companies listed on the exhibit, which total aggregated $1,984,000,000 in 1936. I haven't determined how many of these companies have 10 per cent or less of the capital investment of defendants. The figures are here, however, and that fact could be determined by inspection.

In the course of my preparation, I have used several combinations of companies and earnings. I looked particularly at companies where I thought there was a close comparison or corresponding nature of risk as, for example, oil pipe line companies, gasoline pipe line companies. After studying those returns, I thought that a broader field gave a better example. I have not, in preparation for this case, combined any of the companies shown in that exhibit, their invested capital, and their earnings, to determine the relationship in any other categories than as an overall category. I have made other examinations and put this one in as being the fairest. This is a weighted average at which I arrived that is, my ultimate figures for each of the years and for the overall period. It is the total capitalization, divided into the total income to get the final figure. That gives you the fairest average of the return on the invested capital.

Yes, I testified that life insurance companies are the largest segment of the institutional market and that unless you know in advance today that the large life insurance companies will buy an issue of this type, your sales problem becomes extremely difficult and almost impossible. The chief interests of life insurance companies and trust funds in making their investments, is the high degree of safety of the investment. I also testified, in comparing a natural gas enterprise with a copper mine or some other mine, that you have a market at one end, the price of which is controlled in the first place, and which you cannot stop serving in the second place. Yes, that is true of any utility industry. I was differentiating between the regulated utility and unregulated industry. This is a hazard of regulated companies.

You must get the full significance of that testimony. I am comparing an industry which has a mining risk at one end and the public utility risk at the other end of the line. Yes, it is true of all regulated industries, that the price of their market is controlled and that they cannot stop serving it. I have so stated. That is equally true of all other regulated utility companies, but when you combine that risk with a mining risk it takes on an entirely different complexion. That was my point.

I testified at page 5149 that the large institutions have never before been buyers of natural gas bonds but that they stepped into the market and created for the period I was talking about a peculiar demand for these securities. That doesn't indicate that their belief today is that the natural gas industry does not face the same degree of hazard and risk that it faced in the past. It does not
1307 indicate that institutional buyers today representing insurance companies as exemplified by insurance company trust funds have any belief that an investment in natural gas securities is not as hazardous as it might have been ten years ago. There is a peculiar circumstance there that has nothing to do with that interpretation. I testified at page 5152 that before the middle 20's the public, outside of those interested in the oil business, would not put any large volume of money into the natural gas business. In the present case, I should say it wasn't desirable to ask the public other than the public or the companies interested in and intimate with the oil business to put money into defendants because of the difficulty and cost and expense of doing it.

At page 5153, I testified that of the nine companies shown in the chart on page 4 of Exhibit 147, seven were either solely distribution companies or had important distribution facilities. Two of those seven companies, namely, Cities Service Pipeline Company and Panhandle Eastern Pipe Line Company, do not have important distributing facilities. If you will look at that sheet which was among the working papers I gave you, you will notice there an issue, I think, of Cities Service Gas Pipe Line Company bonds. In my testimony before the S. E. C. I said that Cities Service Gas Pipe Line 6's, due in 1943, were on a 5.43 basis at recent prices and yields. Those bonds, however, are out of the chart on page 4 of Exhibit 147 after December, 1938. The Panhandle Eastern Pipe Line figures are on that sheet. The yield basis on those bonds was

3.52 when that sheet was made up. The date is right at the top of it. The working sheet shows the issues included at the end of the line as drawn on that sheet, and the markets at that time, which was October, 1939, as you will note from the date on the sheet right across the top.

The only issue of Southern California Gas Company bonds included in the graph are the 4½'s, due in 1961. Those now show a yield as of the present of 4.07 per cent. Southern California Gas Company has outstanding also an issue of 4% bonds due in 1965. The amount is $15,000,000 as compared to $12,500,000 in amount of the 4½ issue which is used. The yield on those bonds is 3.47. I don't know without looking what the call price on the 4½'s due in '61 is. Without looking I don't know whether they are callable. On examining my notes, I find they are callable at 1.04 at the present time. That fact is one of the factors that, to a degree, is keeping the price down and the yield up on those 4½'s. They are under the same mortgage as the 4's. I believe both issues have the same lien on the property. I think the yield on the 4's, to wit, the yield of 3.47 percent, may be a little fairer indication than that on the 4½'s, of the yield on mortgage bonds of that company with that risk. In justice to the exhibit, I want to explain that the 4½ bonds which I think were issued earlier went in in 1931. The 4's were issued in 1935 and we would be inclined not to put in two bonds of one company if we could avoid it. We were carrying on down the same bonds, but I think the 4's at '65 instead of the 4½'s at '61 might be a better index, and if we were starting this exhibit all over again we would certainly try to use that better index. It would change the chart somewhat to make that sub-
1308 stitution. The chart reaches a final result of 4.41 per cent. The substitution would make the yield a little lower. It would cast it down. It would not take away the validity of the exhibit, however.

Questions by the Examiner.

The size of the issues is disclosed on the working sheet I brought in today. It gives all the information. I brought three copies of this work sheet. I will be glad to furnish any number you want. I had only three with me.

Cross-Examination by Mr. Booth Interposed.

I don't know what the actual investment in the natural gas production and transmission industry in this country totals at the present time. I haven't any idea what it is. I would rather not venture an estimate. There are figures, I think, from which official estimates can be gotten. I don't recall ever seeing such a figure but I may have. I know that it is a great deal more than a hundred million dollars but I don't know what it is. I don't know the annual revenues received by all the natural gas transmission and production companies for the year 1938. I haven't the faintest idea what the figures are. I am familiar with Poor's Public Utility Manual. I think it is a reliable source of information. On a figure like that which may well appear there, I would be glad to accept Poor's figure. I would like to go back to the source, which is probably the American Gas Association. Some times there is such a figure in the manual.

Poor's Manual of Public Utilities is an annual publication. There is a section titled "Survey of Electric Power and Gas Utilities". There may also be included a paragraph bearing upon the natural gas industry, but I haven't that paragraph in mind. I don't think that I would necessarily agree with the conclusions of Poor's as to this or that in the industry. I might accept their factual statements and figures as authoritative and reliable. I could not agree whole-heartedly with the statement you read from page 164 of Poor's Manual for 1939 to the effect that "vast new sources of supply with long-lived reserves have been developed in the Southwest and in California within the last decade, allaying fears as to the Industry's life". I think the next statement to the effect that "extensive new pipe line transportation systems have been built to carry this gas to the large population centers, notably those of the middle west and Great Lakes regions", and that "this has opened immense new markets for future exploitation" is an accurate statement of fact. "Exploitation" I would interpret to mean a proper opportunity for more and more business.

I do not agree with the statement you are reading to the effect that "natural gas is clean and has a higher heat value than manufactured gas. Moreover it can be successfully mixed with manufactured gas." That is a broad

generalization. I think you can manufacture gas with just about any heat content you want to. Of course we all admit that it does have a higher heat value than the manufactured gas commercially served and used; but the statement you have read is a loose statement of the very type that made me say that I would not accept the conclusions of the manual. It is true that natural gas had and
1309 does have a higher heat value than the manufactured gas which has been supplied, but that is not the way the statement you read from Poor's reads. There wouldn't be any question about the accuracy of that statement if it were properly worded.

You have read me a statement from the same source to the effect that in "most localities natural gas is cheaper so that it can compete successfully with coal and oil as industrial fuel", and that "even in the heart of the coal and oil producing regions natural gas is being sought on a price basis. Moreover as costs and prices generally advance with industrial recovery or for inflations, the cost of natural gas should be among the least affected." I think in fairness I should say that natural gas in most instances is chaper from a rate standpoint than any other industrial fuel and probably will continue to be, so long as it is regulated to a point where there is a pressing down of the rate of return and the profit that draws capital and increases the business, which results in such figures as I read for Columbia companies today for Mr. Slaff. All of Columbia's ultimate markets, with some exceptions, are regulated. Those figures and this statement bear out the pessimism that I expressed for the industry earlier this afternoon.

I have given a great deal of attention to the price tendencies of bituminous coal. I haven't definitely arrived at the conclusion that the price is going up; but let's assume for the purpose of your question that it is. When you restrict natural gas to industrial purposes and the price of coal is raised, you place the natural gas pipelines in a more favorable competitive position. But I speak now of our own system and I think that is indicative of the whole industry. The principal competitor with natural gas on a fuel basis is oil, and natural gas as an industrial fuel is valuable because of qualities that neither oil nor coal have in reality. In very fine heat treating, price is not the objective.

Cross-Examination by Mr. Slaff Resumed.

I have before me a copy of my Exhibit 147. You state that one of the copies furnished you showed the total invested capital for the year 1936 to be $1,784,733,843 and ask me if the first 7 should not be a 9. The copy I have here shows a 9 and I can't imagine a sheet with 7 on it. You state that the same copy shows a rate of return of 10.34 per cent and the other copy shows 9.30 per cent. I think the 9.3 is correct. You state also that one of the exhibits shows net earnings before interest in 1937 at $174,030,335, and in another copy $174,128,719. The former figure is correct, I think, and 8.37 is the correct figure for the rate of return for the year 1937. The three-year average rate of return of 7.32 is the correct one. I can't account for these differences in copies. I don't know how it occurred.

1310 H. B. DORAU, a witness for defendants, called for cross-examination, testified:

(October 30, 1939.)

I have a couple of corrections I wish to make. With respect to Exhibit 152, pages 37 and 38 and the supporting tables running to page 49, I would like to make it clear that in the analysis of the quality of financing, tractions, railroads and telephone companies as such were excluded, that is, it refers to gas and electric companies and any services which gas and electric companies may in a composite manner be rendering. I think I failed in my description of it to make that clear. In other words, the effort was to eliminate pure or dominantly tractions, railroads and telephone and water utilities. If a gas company is rendering a water service it is in.

Secondly, there is one figure I would like to correct on page 12 of the exhibit. There was an incorrect calculation of the weighted yield of the 18 manufactured gas company bonds for 1933 in which an inappropriate treatment of the third decimal point occurred. It ought to be 7.31 instead of 7.32.

Cross-Examination by Mr. Booth.

My recollection at the time I was testifying about the percentage of public utilities which had not earned taxable income was that such statistics, which I had occasion to refer to seven or eight years ago related to 1930. I was speaking from memory at the time. The reference was to 1930, I am quite certain. That happened to be the year to which I was referring in an entirely independent connection. I was speaking wholly from memory. I am referring to my testimony on page 5624. It is true that taxable income as reported to the government may be zero, despite the fact that a company may actually report substantial net earnings to stockholders.

I have been present here practically every day this week. I took one or two extra leaves but I think I heard substantially everything. I was here for a substantial part of the cross-examination of Messrs. Emery, Delafield and Gilman. I was asked to come down here for a conference on Monday morning and then it was rather expressed as desirable that I stay on. I don't know whether that suggestion came from Judge Morgan; it came out of a group discussion. I would not want to assign it to any particular person; I don't remember.

I cannot say as to how other people felt about my answers on cross-examination if I had not been present here to hear the other witnesses. I have no concern of that sort with respect to the scope of my own direct testimony.

If I understand your question, I divided up my conception of rate of return into certain specific elements. I attempted to envision the total rate of return in terms of the elements which are today recognized in such a total rate of return. Those all appear in my subsidiary classifications.

In connection with my conception of pure interest, I recall that in preliminary cross-examination you
1311 asked me whether or not I had allocated a specific portion of the amount to which I had testified as a fair rate of return to the element of pure interest. I thought my answer to you at that time was fully informative. I recall that you did cross-examine me about that. I recall that you called my attention to an abstract of the testimony in the proceedings before a Master involving the rates of Peoples Gas Light and Coke Company that

had been prepared, but in which you did not have available the questions and the answers. I do not have before me the record made before Master Swisler beginning with page 9272 from which you read a question and my answer as follows: "Then 3 per cent strikes you as being or constituting that part of the 7 per cent which would represent interest?" Answer: "I think it is probably a fair per cent to use for pure interest." I am willing to accept your indication that I did make the answer quoted to the question, although I do not know whether you read all I testified to in that connection.

That was a very extended cross-examination. I might say possibly in amplification of Mr. Booth's remarks that I thought the major part of my own effort was in response to cross-examination and not in direct testimony before the Commission. I remember it was something like a half day of direct testimony and four days of cross-examination. I assume that the question and answer you have read are from the record made before Master Swisler.

At page 5726 of the record in the present case appear questions and answers you have read to me here. Those answers appear to be accurate statements of what I testified. I was not referring to geologists in the singular or a collection of singulars. I was reflecting my impression of geological opinion in general as I see it reflected in the literature dealing with this subject. I have from time to time read the statements of geologists in connection with security issues, some of which I am quite sure, speaking from memory, had to do with the Panhandle field and adjacent fields.

I think I read a prospectus on the Panhandle Eastern Pipeline Company, one I received possibly in July or August of this year. I would like to refresh my memory as to which geologist expressed the opinion contained in that prospectus. It may have been Ralph Davis, I am not sure. (Objection by Company counsel overruled.) I do not believe I could quote the approximate amount of recoverable natural gas that he estimated to be in the Panhandle Field.

I do not believe it is wholly correct to say that before an investor can appraise the risk and uncertainty, he must know the allowed amortization period and the probable life of the field. A great many investors are not in position to ascertain anything of the sort and in my opinion

they do not do it. I think the large number of investors probably do more of this sort of thing, namely, they have an impression that there is a degree of uncertainty involved in this situation which they are not competent to deal with, and they just class it as a security having that kind of an element in it. I do not believe that it is necessary to know or have some specific notion as to the probable allowed amortization period and as to the probable life of the field in considering the uncertainty of the exhaustion of the field either from a physical or an economic standpoint.

I think I recall accurately the testimony of some witness that the informed large-scale investor would be disposed to introduce a margin of safety in the life of the bonds against the—I think he said probably the most conservative geologist's estimate that would be offered to
1312 Lim. The phrase "the most conservative geologist's estimate" was not used. I am recalling my impression of the testimony. I cannot point to any place where that phrase was used. I have not read the testimony. I am speaking from memory.

I do not know that it is the practice of the natural gas industry and the principal companies in the industry to employ experts who would testify to a longer life in connection with proposed issues of securities, and a shorter life in proceedings of this character and I hope that is not the case.

I do not believe I read all of the Panhandle Eastern Pipeline Company's prospectus. There is much in those things that does not concern or interest me. I look at most of those things as they come along. A prospectus is a statement under the requirements of the present Security Law which the underwriters have to have available to offer the prospective buyer or purchaser of the security or issue. They are very voluminous. That is the reason why I do not presume to say that I read all that is in such a document.

You asked me whether, if the prospective life of the field is 20 years and the investors are allowed to amortize the investment over a period of 15 years, the risk to the investor is not reduced more than if the amortization period is taken at 20 years. That is a pretty big question. You state that you are not talking about value but the cash that has been put into the enterprise. I could not agree with you in the light of that statement.

I believe that any reduction in the period over which an investor expects to get his investment back, whether present investment or past investment, reduces the risk of an undertaking in which you will get your capital returned to you in the normal course of business in one year, which is a different sort of an investment than the investment in hydro-electric property. I looked at the prospectus of the Panhandle Eastern in the ordinary course of examination of those prospectuses. I attempt to keep a file and look at most of them that come along because it is a subject in which I am expected to be normally informed in the course of my regular duties. I do not recall whether or not there was a statement in the prospectus to the effect that the recoverable amount of natural gas in the Panhandle or Amarillo field was not less than 18 trillion cubic feet as of May 1, 1939. I do not recall whether the figure was 10 trillion cubic feet but I would be surprised if it were. I do not recall seeing a figure as low as that in any of the literature which from time to time I have looked at. I do not want to be misunderstood here. I have relied upon and used no particular estimate of the reserves in the Panhandle field. If you will examine my testimony and the questions preceding the ones you were asking, you will see that the discussion did not depend on any such thing. I do not believe there were any particular figures in my mind when I answered the question. I do not have any particular figure in mind today. I think it would be quite inappropriate for me to assume to estimate. I would not want to say that I remember that none of the literature which I have examined as to the probable amount of recoverable reserves in the Panhandle, contained a figure as low as 10 trillion cubic feet as of either January or May, 1939. I do not presume to remember what the comparative figures are for the identical dates either May, 1939, or January, 1939.

I think if a single investor or a group of investors were contemplating an investment of such a huge sum of money as $50,000,000, it is entirely reasonable that they would try to inform themselves both as to the fundamental geological factors and their possible significance in the economic outworking of such an investment. I believe it would be entirely inadequate for them to come to a conclusion as
1313 to the proper amortization period on the basis of geological estimates.

After arriving at an opinion as to the probable life of the field, the investors should not then arrive at a judg-

ment of the amortization period over which they would expect to amortize the investment. Assuming that prospective investors have arrived at a judgment as to both the economic and physical life of the field and the business, I think they would then be in a position to make an estimate of the proper period for amortization of the investment.

On page 5726, it appears that I stated that I accepted the opinion of geologists and technologists that there were great hazards with respect to the probable physical supply of gas. I think I made that statement. I was speaking collectively on my impression of what the consensus of geological opinion is about the physical predictability of supply in this industry. I have looked at a great many sources from time to time bearing on this. I can not isolate what I did in the period of a couple of months from what I have done since 1917.

I read in the Federal Trade Commission's report about the exhaustion of gas supply and wastage of gas. I do not know whether they quote particular geologists. I think in fact they quote from a report of a committee of a professional. I don't remember the names of those on the committee of that professional geological society. I cannot recall whether I examined or made an effort to obtain any statements that may have been made by the investors or the representatives of the investors as to the probable life of the field at the time they put their money into this enterprise.

I examined a great deal of material and it seems to me that there were articles from professional societies that dated back to about that time. I do not know what the people who put their money into this enterprise did about such estimates. I know who George F. Mitchell is. He is an executive of one of the Chicago companies interested in this project indirectly. I don't know whether he is president of the Peoples Gas Light & Coke Company. He may be president and Mr. Ranney may be chairman of the board, I don't recall which is which. I recall seeing Mr. Mitchell's name in connection with the discussions bearing upon the building of this project. I don't remember what particular aspects he was concerned with. I did not examine any testimony that he may have given before the Illinois Commerce Commission as to the opinion of the investors on how long this project would last. I do not know what his opinion was or is. I did not read the testimony of the geologists employed by Chicago District Pipeline

Company in the case of that company versus Lindheimer as to the probable life of the Panhandle field in 1934. I do not know what their estimates were. I do not believe I read the testimony of the geologists in the present case. I have not read the testimony of Mr. Claude C. Brown. I hope to read it but I have not had the opportunity to do so. I hope to read a great deal more of the testimony than I have had time to read. I have been working under considerable pressure these last few months. Given time, I should carry all of my research a great deal further.

All of the testimony that I have given in this proceeding was considered by me as basic to both companies here involved. I testified at page 5741 to the effect that if there is an intervention of a contractual relationship between those engaged in producing and those engaged in marketing a product whose interests are not common in the matter, there still remains a grave economic hazard, namely, that if the terms of that contract turn out to be other than what is bearable under the economic condiions disclosed, it is very likely to be modified to conform to the economic possibilities of the situation.

1314 I do not understand that the Natural Gas Pipeline Company of America and The Peoples Gas Light & Coke Company have a financial interest in common. They have some interests in common. They are commonly interested in the market in Chicago, obviously. When I used the words "interest in common" I meant financial interests. The Peoples Gas Light and Coke Company have more than a financial interest in the success of defendants herein. The Peoples Gas Light & Coke Company, through an intermediary company, has a substantial investment in defendants.

I am not suggesting that the investors in defendants had no economic protection through the contract with Chicago District Pipeline Company. I testified in recognition of a degree of the opposite. I have testified that I considered that it introduced a degree of stability into the relationship. It introduced a very significant amount of economic protection. It would be hardly conceivable that such an arrangement would be entered into, unless there was identity of ownership, without a stabilizing relationship such as a contract.

Questions by the Examiner.

The expression "in common" as it was used here has a particular meaning. You and I have a common interest in something that the two of us are interested in. If you had a mortgage on me, we would not necessarily have a common financial interest in any third party situation. It is the distinction between the loose use of the term "partners" that developed here in the cross-examination and an ownership, for example. If I have an ownership interest in your business, I do not construe that as a partnership arrangement, but if you and I have a common interest in a third party, then we might loosely be construed to be partners in an enterprise even though it is a corporate form of arrangement.

Cross-Examination by Mr. Booth Resumed.

I testified to the effect that the economic and financial analyst is impressed with the fact that the property depreciates more rapidly as it reaches an older average age. I have made no detailed study of the depreciation of these properties. I have looked at their reports which indicate the amounts being charged for depreciation. I think there is such a charge on the reports that I have examined. This answer did not refer to any such study. It was a general statement. I have not made any investigation of the depreciation of the property. I have never done such studies on the properties of any natural gas company. If I may explain that, I am not an appraisal engineer, and I do not make physical life studies, but I have made studies of the results of engineering and other data. I can refer to no specific instance of having done that with reference to a natural gas company.

As I have used the term, "depreciation" means loss in service value. The definition you quote to the effect that "depreciation is the loss not restored by current maintenance which is due to all the factors causing the ultimate retirement of the property" and that "these factors embrace wear and tear, decay, inadequacy, and obsolescence", while good as far as it goes is not adequate in my opinion. The newer classifications of accounts in putting in those terms include the depreciation on account of legal requirements and I think that has got to be recognized.

By "legal requirements", I mean rules and regulations which might prevent property from being used even though it might technically or economically qualify. The definition you have read sounds quite familiar, I may have read it or I may even have written it. I am not suggesting that Chief Justice Hughes copied my definition of the term "depreciation" but we have perhaps thought the same thoughts and read the same literature.

1315 My definition of the term "service value" is economic value in the employment to which the unit of property is put. I do not think that definition is a serious departure from the usual definitions of the term as contained in the uniform system of accounts pretty generally. I think I have in mind one or two things which have not as yet been recognized, or well established. For example, the valuation of depreciation involved in standby equipment which is technologically obsolete but which may nevertheless have significant service value in a composite plant. The Federal Power Commission's system of accounts for public utilities and licensees uses the term "service value" as being the "difference between original cost and net salvage value of an electric plant." That starts with the presumption of original cost which I do not start with at all. Otherwise, I think our ideas are fundamentally the same.

If I may say just a few words to elaborate my position, I would like to add that from a strictly economic standpoint the basis for such calculation is the present value of the property. I appreciate that for accounting purposes that might not be appropriate. The purpose of the system of accounts prescribed by this Commission and other regulatory commissions is to assist the commission in the regulation of the utility; and I would have great respect for that approach because of its administratability, but considerations of administratability and economics are quite different at times.

I used the term "present value" in a relatively simple meaning and in contrast to original cost. The present worth of the property as distinguished from its worth at the time of acquisition. The principal difference there would be the reflection of the present level of values. There may be an actual change in the value of the unit of property such as a piece of real estate. There might be a rise in the price level that would be reflected in the

present value. When I say a change in the present value of a piece of machinery or a piece of real estate, I mean something besides change in price level. There may be an actual change in the value as well. The value of the piece of real estate might relatively actually be higher and the price level itself might have moved up.

That might be true in the case of machinery when you have substantial changes. It might also work in the other direction of course. All value is finally relative. I have overheard discussions here and I think some other discussions of determination of cost of replacement of property. I know nothing about that. I never examined them and paid no attention to them. Present value as I have used that term is not the same as replacement cost and as reproduction cost. I am under the impression that defendants have made some estimates in this case as of some date near the present. I have not looked into the matter. I do not know how far they extend into the future. I cannot say it would be unreasonable for them to run over two or three years in the future for the purpose of determining the companies' income. They might go a considerable number of years into the future. It has been done.

If I understand the law of the land correctly, you are under obligation reasonably to project values into the future under the decisions of the United States Supreme Court. I have come to no conclusion as to what I would deem to be the reasonably immediate future, I have stated that I have not examined the estimates that were made by the company as to the cost of replacing or the cost of maintaining this property in the future. Since I do not know what the estimates are, I cannot say whethey there are any costs that are not included in the estimates.

I do not have in mind the figure as to the part of defendants' total investment covered by its investment in the 24-inch pipe line. If I recall correctly, the investment in the natural gas resources is not an over-
1316 whelming proportion of the whole, consequently the investment in the pipeline or transmission facilities would represent the major part of the total investment. The investment in the gas reserves and resources as distinguished from the transportation facility would probably amount to between a quarter and a third of the

whole investment and from two-thirds to three-quarters, if I remember correctly, in its pipeline. I do not know how much the company has estimated it will have to spend for replacement or repair of this line.

I have seen the figure showing the amount the company has expended in replacing and repairing the line during the last 8 years but I do not recall it. I would not want to guess at it. I have told you that I do not remember the amounts. I don't know the relationship of those costs to the investment. I saw them as a part of a revenue and expense analysis that I examined. They were given to me in the form of a historical analysis of revenue and expense. My impression is, as I expressed it in the general testimony, that the proportion of the total investment represented by repairs and replacements would probably be smaller in the initial years and rise to higher levels as the property matured. I do not know what the figure for maintaining and repairing the entire line would be, or whether it would be 2% or 5% or 20% of the total investment. I haven't any notion as to that at this moment. My answer applies equally to the company's action operations in the past and to its estimates of cost in the future. I profess no knowledge of the estimates of the future. I have seen the figures as to the past expenditures but I don't know them.

In a broad way, the question of whether or not it is economical to replace any item is a matter of comparative costs. I should add that it becomes a question of cost over a period of time, not cost at the moment. I don't mean that the answer lies in a comparison of the present values of the alternate costs. What I meant by taking into account a period of time was the question of what time you had to get the benefit of any possible relacement. Such a prospecfive period of time might well influence the question of present value. I have made no engineering examination of any single item of property or of all of the property of defendants, and have made no inquiry to determine whether it would be more desirable for defendants to use depreciated facilities or to replace them. I mean I have made no such investigation in connection with my study in this case.

1317 I testified on direct examination in substance that from an economic standpoint any enterprise which has to produce its wages of capital, its income, by an

intensification of its utilization factors is considered as being involved in hazard which would not be present otherwise. That, like the other factors to which I have testified, influenced my judgment in arriving at a rate of return for defendants. I did not mean to imply that the pipeline company had intensively exploited the ultimate market. That testimony definitely applies to defendants. The intensification in the utilization of facilities of the pipeline company may be viewed independently of the intensification of the retail company's distribution. I believe that a company of this sort would be entitled to a lower rate of return if it were earning its wages of capital without engaging in intensive use of its facilities or its investment.

You do not accurately state the idea when you say that if the company were regularly selling 50% of its capacity instead of 90% it would be proper to allow it a lower rate of return. I think that the statement was made in my testimony that a concern which reserved its efforts to taking the cream of the market was, in my opinion, not entitled to the same consideration as one which attempted to exploit the market to its limits, using the term "market" very generally.

I have made some comparisons as to the sales of natural gas pipeline companies to determine the character or the classes of business and classes of sales which each pipeline company has; but I did not want to say that I had looked at all of them to determine that this one is less vulnerable than any of them. A part of the picture is presented by my statement in my direct testimony that one of the risks of this business is that 25% of its total revenue is obtained under interruptible contracts. I do not mean to imply that the interruptible gas is not sold at compensatory rates or anything of the sort. I made no investigation on that point. I do not know what proportion of the total business of the Detroit City Gas Company is represented by industrial gas. That is true also of the Brooklyn Union Gas Company.

I have those figures here as to Peoples Gas Light & Coke Company and the other distributing companies which market the gas sold by defendants for the Chicago area. The statistics are all broken down between residential, general and other consumers, and the interruptible supply and sales to other utilities, which three classes

are in the proportion of just about one-third of the total load. These statistics are in therms. I think I have comparative figures in dollars but I do not seem to be able to put my hands on that at the moment. I don't know how the maximum coincidental daily demand of the Peoples Gas Light and Coke Company, Public Service Company of Northern Illinois, and Western United Gas and Fuel Corporation compare with the maximum demand on Natural Gas Pipeline Company at Joliet on the same day. I have no idea.

I recall that I was questioned concerning the falling off in revenues during 1938 as compared with 1937. I do not believe I have a report covering 1939. Yes, I have an idea as to whether or not they have increased. I would expect that they will be better than they were in 1938. I do not know how much better. We have only a part of the year. I did not make a compilation of the comparative figures for 1939 with the figures for the same period in 1937. There are seasonal factors involved. I do not know how the actual figures compared with the company's estimates of revenue and income in 1939. They did not tell me what their estimates were. I do not know what those estimates were. I cannot say that I know that the company made any estimates of revenue for the period 1939 to 1954. I do not know whether they made estimates of net income for that period. I have examined no such estimates. I have made no estimates of my own as to what the company's revenue or income would be for 1939 nor any other period for any class of service. I was not in position to make such estimates.

I testified on direct in substance that it seemed to me that it sums up to the reasonable economic expectation that higher unit costs of production would result in the future. No, I did not examine the company's estimates. That statement was not based on any examination of the company's estimates. I did not testify as to how much higher they would be. I don't know how much higher they would be over the life or the probable expectancy of the life of the operation. I do not know how much higher they will be 5 years from now.

I could not give you the figures on the unit cost as to how much higher the costs of production are today than they were eight years ago. I don't know what they are.

I have seen figures on unit costs resulting from statistical analysis but I never made them.

I testified heretofore in substance that I think the situation is clearly comparable to that of a manufacturer who finds that his outlets, his contact with the ultimate consumer, is only through the buffer of a distributor or a limited group of distributors. That was another factor that I considered, the isolation of the pipeline from the market. I think the word "clearly" might be stricken if the record bears that much change. I think the word is probably a little strong for the illustration I used. (Counsel for the Illinois Commerce Commission states that that is one correction which he will not agree to.)

I do not know the exact sum which the three utilities which distribute gas purchased from defendants have spent for developing new business since the introduction of natural gas by defendants. I am under the impression that the Peoples Gas Light & Coke Company, at least, spent a considerable sum in an effort to develop the market. I do not have the exact figure in mind. I have the impression that the introduction of natural gas gave rise to additional expenditures. Obviously it was more than $10 but I would not want to estimate whether it was half a million, $2,000,000 or $10,000,000. I recall that incident to the change-over, there were probably in excess of a million dollars of expenditure experienced. I did not attempt to ascertain such figure. I made no calculation to determine how much the income of defendants would have been reduced had they borne the expenditures which were paid by the distributing companies for the development of new business and other expenses incident thereto. I think it would have been a figure worth giving attention to.

I have not the figure as to what Peoples Gas spends annually in its advertising and selling expenses. I would not want to guess at the amount.

I cannot answer your question as to whether the management of the Peoples Gas Light & Coke Company is poor or able—with those alternatives. (Objection by Company Counsel overruled.) I don't consider it poor. I think it has competent management.

1319 As to whether it is agressive, that is a relative term. I don't think I could go with you as to that in my understanding of the word "agressive." It is a relative term and in the comparisons I am thinking of, I would say no. I mean in comparison to the Commonwealth Edison

Company of Chicago for example. It is difficult to appraise whether or not it is better than the management of other gas companies. I believe it is better than a great many gas company managements. I think that it is fair to say that this management is outstanding among gas companies. I am not certain that the word "outstanding" should be followed by your expression "as to all aspects." I have the impression that from an operating point of view, it is quite competent although it is in a field I am not competent to judge. I think it is in the field of merchandising and promotion that I would have some reservations.

I have not made a study of the sales effort of the Detroit City Gas Company, the Laclede Gas Company of St. Louis, or any large artificial gas company following the introduction of natural gas.

I do not mean to say that there is no inducement for the management of Peoples Gas Light & Coke Company to develop the market within the city of Chicago for the sale of natural gas or mixed gas. As to whether or not the local distributing companies in the Chicago area are required by their relationship with defendants to develop the market and territory which they serve, the fact that the Peoples Gas Light & Coke Company has an investment in this market is an urge to do what it can with it. The fact that they have a contract to buy gas which contains features which have a tendency to put a bigger pressure on them is a factor. I could not say that the fact that they have an investment in this company is a factor—there is a certain conflict there which probably would have to resolve itself if there were any choice in one direction or the other.

I do not know what dividends the local distributing companies in Chicago have received from defendants, but I doubt very much whether they refused to take any that were made available.

I am not familiar with the dividends the Natural Gas Pipeline Company of America has paid within the last few years. I do not consider that very pertinent. The matter of their paying dividends seems to be motivated by other considerations.

I have testified that in my opinion, an investor in the securities of these companies would be impressed, and should be impressed, with any possibility of direct competition of natural gas from a different source of supply at a shorter distance from the city of Chicago than the 950 miles between that point and the Texas Panhandle field.

I gave consideration to that factor and to the fact that defendants do not have an exclusive franchise. I did not predict where the raiding line would be built from. It is not a question of where there is an adequate source of supply necessarily it is a question of where there might develop an adequate source of supply.

I gathered from my studies that natural gas is being found in increasing quantities in southern Illinois. I understand natural gas has been found in western and southern Michigan—western I believe; that there are substantial supplies of natural gas in Kentucky. I believe other natural gas pipelines run within distances not too remote to make possible at least the building of spur lines in the direction of the Chicago market. I think that is true of Panhandle Eastern which comes within 100 or 120 1320 miles. It is physically possible to build a pipeline anywhere. I meant economically, of course. I do not know what the developments in southern Illinois so far indicate as to the probable supply down there. I am not sure that anyone knows yet. I have not contacted the Bureau of Mines to determine what natural gas is available or has been discovered so far in southern Illinois. I have not contacted the State Geoglogical Survey of Illinois formally. I did not know that there was anything formal in the way of a survey by the State of Illinois. I knew that the State of Illinois has a geological division. I did not know as a fact that that division makes constant studies of oil and gas reserves. I have a recollection of some reports as to the studies, but I don't remember whether they were oral expressions of opinion or whether I read them somewhere. I have read about various people being interested in the fields down there and I know that Pure Oil Company is interested in an important way. I do not know of other companies by name. I do not know whether their rights are confined to oil or what they own.

My understanding is that up to this time the expected reserves in Michigan are not what might be called large. I am under the impression that they are not large enough to supply the city of Chicago. My impression is that they are not large enough for that purpose as yet.

I would not want to say that there is no possibility of the development of a source of supply from southern Illinois or for that matter from Michigan, if things change. Only a short time ago, they had no notion at all of there being any significant supply in Michigan or in that territory.

I do not know how much it would cost to build a pipeline from southern Illinois to Chicago. I am not an estimating contractor. I would not want to express an opinion about that. It is 300 or 400 miles from those oil fields to the city of Chicago. I do not know what it would cost to build a pipeline 300 or 400 miles. I have a feeling that it would depend a great deal upon the kind of a line, the particular circumstances encountered in that territory, and so forth.

Assuming that it is a line like the line of the Natural Gas Pipeline Company of America, I think it would cost more than one or two million dollars. $25,000,000 is probably a bit too high. I do not know what the cost of defendants line was. I don't know what total investment would be required for a line to supply the city of Chicago from southern Illinois. That would be the sheerest speculation.

I do not know what it would cost to build a line from western Kentucky to the city of Chicago. I would not be in a position to make an estimate. I do not know whether the natural gas would have to be obtained from western Kentucky.

I do not know at what price natural gas would have to be made available in order to make it economically feasible for Peoples Gas Light & Coke Company to purchase natural gas from a competing company. I have not had access to the figures that would be necessary to make such a calculation. I do not know what it would be. I have read the contract between Natural Gas Pipeline Company of America and Chicago District Pipeline Company. I would hesitate very much to say that I am familiar with a legal document of that character. I have read it. I have not looked at it since I testified on direct.

I believe I heard Messrs. Gilman, Delafield and Judge Morgan discuss it since then, but I have made no effort
1321 to check whether the answers were accurate or not. I was not particularly concerned. (Objection by Company Counsel overruled.) A great many statements that were made here were made with the very careful addition of the observation that they were from knowledge or from estimates and so on, and I would not be in a position to judge.

I have stated that I gave consideration, as one of the elements influencing my judgment, to the possibility of the construction of a raiding or competing line, and I think it is an appropriate element for consideration.

I do not know at approximately what particular price

natural gas would have to be bought by people like Peoples Gas Light & Coke Company before it would be economically feasible to buy gas from a competing company in view of the contracts which the distributing companies have with Chicago District Pipeline Company. I am not sure that I could make such a calculation. I presume that gas sold in the city of Chicago would have to be sold through the Peoples Gas Light & Coke Company and the other two distributing companies who obtain their gas from defendants.

People have been known to invest their money in a competing line for the nuisance value of the line. I do not believe anybody would make the investment without the expectation of making 8%, considering the risks and hazards involved.

I cannot say that I know what the investors in this enterprise estimated that they would make as the result of the construction of a single line to Chicago. I seem to recall some early papers indicating the earning possibility of such a line; but they did not express the expectation of the enterprisers in this particular. They indicated what the possibilities might be, as I remember, under different kinds of circumstances.

I know something generally of the early history of the line; but I do not recall that any record disclosed the expectations of the investors. I made no effort to examine the records on file with the Illinois Commerce Commission dealing with the early history of this line. I have heard in the testimony that Mr. Ralph W. Gallagher was an executive of one of the companies interested. I do not know which one. It did not seem to me to be particularly significant as to which one of these companies he was with. I do not know him. Gallagher's name may have been stated in the Federal Trade Commission report which I read. There is a great deal of material there.

You ask whether I know of anyone who would put up money to build a competing line. Mr. Ickes might. He likes the city of Chicago. Mr. Ickes would get the money from the Government. I do not know just what the present status is as to who has charge of federal loans going into projects of that kind. In changes too rapidly for me to keep up with it. I did note in the Federal Power Commission Opinion No. 39, that there are two contemplated gas lines which are looking to the R.F.C. for financing. Those lines have not been built and probably won't be unless they get the money from the R.F.C.

Defendants started their operations about the beginning of 1932. There have been no raiding lines built to Chicago as yet. It has been a bad 8 years. I am not able to state any present source of supply where the reserves are adequate to supply another line to the city of Chicago. I do not know of anybody who would put up the money to build a line to the city of Chicago even if the reserves were adequate. I do not know how much it would cost to build such a line. A line 300 or 400 miles in length would cost several million dollars. I testified that I do not know at what price the Peoples Gas Light & Coke Company would have to buy natural gas in order to make it economically feasible for it to purchase natural gas from such a source. From an investor's standpoint, it is the possibility of such things
1322 happening that must be given consideration. That is an appropriate investment consideration. I do not know what you mean by "particularly threatening." In my meaning of those words, I would not say it is particularly threatening; but it is an appropriate consideration on the part of the would-be investor that defendants are not legally protected in their market. An investor would give consideration to that fact. I think undoubtedly he would give consideration to the practical considerations which envision the supply of natural gas to the Chicago District Pipeline Company and from the Chicago District to the distributing companies. It is an appropriate economic concern of the investor as to whether such a thing could happen.

When I used the expression at page 5788 of the record "particularly threatening and hazardous", I was referring to the particular threat and hazard of direct competition in an industry of this sort. That is what I had in mind. What I said was that "a threat of direct competition is considered particularly threatening". I think this applies to these companies.

I testified that the competition which natural gas finds itself in with such fuels as fuel oil and distillate and coal and things of that sort, is a factor to be taken into account with a company 40% of whose volume is sold for industrial purposes. I considered that as one of the factors in determining the rate of return.

The State of Illinois produces coal. I do not know how much. It is an important bituminous coal producer. I do not know how important. I have not the figures at

hand. I do not know how it ranks among the bituminous coal producing states. I consider it quite important. I do not know whether it rates second, third, eighth, or tenth, but my impression is it would rank up with the first four or five on the list. I do not know what the approximate production of bituminous coal in Illinois is. I do not have the figures in mind. I do not know whether it is 25,000 or 150,000 tons. I have no estimate. I believe coal was being produced in the State of Illinois in large quantities in 1930 and 1931 when this line was built. I do not know as to whether the production was as large as it is today. There was some abandonment and some reduction of production in some sections, but I do not know what the over-all result was. I have no opinion as to the total relative production in the two years.

There are uses in which coal is technically acceptable and where its generally lower price would give it a place in the market. There are other uses in which natural gas has clearly technical superiority in application, and there is an area in between those two extremes in which it is a question largely of alternative cost. The existing facilities for distribution of gas were available before this line was built; and there were industrial customers in Chicago using gas before natural gas was brought to Chicago, demonstrating that there were technical applications for gas, and obviously then for natural gas. My impression is that the use of gas for industrial purposes in the Chicago area in 1938 to 1939 is larger than the use of gas in 1930 to 1931. There has been a substantial increase in my opinion. In a general sort of sense, defendants have done pretty well in building up their business. Calculated on the original capaciay of the line, the load factor the last three or four years has exceeded 100%. Re-calculatel on the new capacity, I think it has been running 89% or 1323 90% and possibly a higher per cent. I believe, on the new capacity it has reached higher levels than 90%. In terms of utilization, I would call that doing very well. It represents very intensive utilization of the line. I was just going to say that I know some that are doing worse.

Some lines have not been as successful in building up the market as have defendants.

I don't believe I have said that one of the factors in

determining rate of return is what the investors would expect to make at the time they put their money into the enterprise. I do not understand that it is appropriate to consider the expectations at some past period in a rate of return examination as of the present time. It is appropriate to consider in determining what will attract capital for an enterprise, the expectations as of the present time.

1930 and 1931 was such a hectic economic period that I would hesitate to make an over-all comparison between returns in those years and as of today. The period 1929 and 1930 was one of such substantial liquidation and reorganization of holdings that we consider the returns during those years as of rather doubtful evidence. But the point I hope to make clear is that the thing I think is relevant is the present necessary supply price of capital. What the people who put their money into this enterprise expected when they put their money into it 8 years ago, is not necessarily one of the factors that might be considered here. They might have had expectations which are entirely different from present necessities. The money that went into this enterprise was originally spent over the period 1930 and 1931. Construction started along about August, 1930, and arrangements and agreements with respect to funds must have been previous to that. I think it is a fair statement that the obligations of the investors really arose in 1930.

(At this point, counsel for complainant produced a document described as a certified copy of Exhibit Nos. 2 and 2A offered before the Illinois Commerce Commission in the case designated Docket No. 21170 and requested that it be marked for identification. At the direction of the Examiner the document was marked Exhibit No. 156 for identification.

Counsel for complainant then produced a document described as a sworn copy of a part of the testimony of Ralph W. Gallagher taken before the Illinois Commerce Commission in the case designated Docket No. 21170 explaining Exhibit No. 2 in that case, with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 157 for identification. Objection by company Counsel to questioning from documents marked Exhibits 156 and 157 overruled.)

I understand that Standard Oil Company of New Jersey owns a substantial interest in Natural Gas Pipeline Company of America. I do not know the exact extent of their interest but I understand they are one of the principal investors. Of my own knowledge, I don't know that Mr. Ralph W. Gallagher was designated as representative of the Standard Oil Company of New Jersey. I read a good deal of the reports, but I had no reason for paying any particular attention to that point. I have read Volume 62 of the Federal Trade Commission Report. That report says here that Ralph W. Gallagher represented the Standard Oil Company of New Jersey on the board of Natural Gas Pipeline Company of America, but I paid no particular attention to his name.

1324 The other men on the board were Reid L. Carr of Columbian Carbon Company, H. O. Caster, Cities Service Company, George F. Mitchell, Natural Gas Investment Company, N. K. Moody, Southwestern Development Company, Rodolfo Ogarrio, The Texas Company, and H. R. Sedwick, Natural Gas Investment Company.

In the proceedings before the Federal Trade Commission, the name of Floyd C. Brown of Chicago appears among the appearances.

(At this point, Floyd C. Brown stated for the record that Mr. Gallagher at one time was a vice president and a director of Natural Gas Pipeline Company of America; that he was not certain whether or not Mr. Gallagher was a vice president at the time he appeared as a witness in the Chicago District Pipeline Company case.)

It is not unusual for men before they embark on an enterprise of this character to make estimates as to the investment which will be necessary for the proposed project and probable earnings. Assuming that such estimates were made by defendants, I don't think I should have made an effort to investigate the estimates which they made to determine the return they expected when the money was invested in the enterprise in 1930 and 1931.

I don't say that it would have been better to read Professor Lagerquist. I am not certain that I examined all of the volumes written by various professors and others which deal with the general question of investments. I made an effort to examine a number of them. I prepared an exhibit with quotations from those publications.

Your statement that I made no effort at all to deter-

mine whether or not any estimates were made by the investors at the time they put their money into this enterprise is not quite accurate. If it be assumed that representatives of the investors who put their money into this enterprise made calculations and estimates as to the probable investment and earnings of the enterprise during its life, I don't think that such estimates would have any evidentiary significance for the determination of the present necessary supply price of capital. The price at which people were willing to go into it at that time would at that time have been evidence in my opinion. Before I would agree that it is good evidence, I would want to test the nature of the expression of that evidence. If those were the conditions under which it was offered, for example, I would want to assure myself if that was the true expectation. I do not know that Dr. Lagerquist expressed any opinion as to the necessary supply price of capital.

(EXHIBITS NOS. 156 and 157 for identification were offered in evidence.)

I don't know where the price of bituminous coal is going. I am aware of some of the factors there, but I could not forecast the price of bituminous coal. I do not know whether or not the prices recommended by the marketing experts of the Bituminous Coal Division of the Department of the Interior propose increases for the price of bituminous coal. I presume they do. There would not be any point in their activity if they were not trying to get higher prices. I made no investigation of that.

(October 31, 1939.)

1325 I have had no opportunity or occasion to make any study as to the price at which Peoples Gas Light & Coke Company would have to purchase natural gas from another pipeline and still make it economically feasible for it to comply with the provisions of the contract between Chicago District Pipeline Company and the Natural Gas Pipeline Company of America. Assuming it would not be economically feasible for the Peoples Gas to purchase natural gas from a competitive line unless it could buy the gas at less than 15¢ per thousand cubic feet, I am not in a position to judge whether it would be possible for a competitive line to be built. There is gas which is being sold for certain uses in the city of Chicago for less than 15¢. I don't know that natural gas is being

sold in large quantities to distributing companies serving in and around the territory in which Chicago is located for less than 15 cents a thousand cubic feet. I don't know whether it would be feasible for a competitive line to be constructed into the city of Chicago if it be assumed that it would not be economically feasible for Peoples Gas to purchase natural gas from a competitive line unless the natural gas could be produced at less than 10¢ per thousand cubic feet. I have no basis for an opinion on that matter. The possibility of such a thing happening is what led me to raise the question; and I think that possibility would raise the question in any investor's mind.

I do not regard such a raiding line as a probability. I think it falls approximately into the realm of what was possible, what might happen. I don't think it is comparable to the possibility of an earthquake; one is a matter of change in human relations and choices of men, and the other is apparently wholly outside the realm of human volition.

The difference is in the basis of such a possibility. I do not think that is the same thing as saying that the two possibilities differ only in degree. In appraising this element, the investor would consider the possibility of a raiding line. I don't think I could interpret the location of the line between possibility and probability in the investor's mind. I do not think there are any places where you can delimit absolutely the line between possibility and probability, but to my own satisfaction there are such places. I think that is implicit in the testimony.

I have testified that I have read the contract between Natural Gas Pipeline Company of America and Chicago District Pipeline Company. I think I should know something about it after one reading. I know that the rate is set up to recognize both the demand and the commodity responsibility. With the demand charge running between seven and eight million dollars of the total charge of approximately fourteen million dollars, the commodity charge ought to be about half the total. I believe the commodity price is about 5 to 6¢ per thousand cubic feet. (Objection by Company Counsel overruled.) My recollection is that the contract provision calls for the payment of a demand charge on 120 million cubic feet of gas. (Objection by Company Counsel overruled.) Assuming that the Peoples Gas Light & Coke Company would have to be able to buy

for less than the commodity charge, since it was obligated to pay the demand charge under any circumstances if it bought natural gas from some other source, I don't think it ridiculous at all to suggest that a competitive or raiding line is possible, and this statement is not changed by the circumstances that I have testified that a natural gas pipeline would demand an 8% return before it could get money to build the line.

1326 I don't know whether Natural Gas Pipeline Company makes most of its profit from its interruptible business or not because I don't know where the margin of profits are. I have made no cost analysis. I have testified that the interruptible business is incremental business.

In my testimony, beginning at page 5728, I referred to technical factors as they might influence an economic opinion. In that connection, I mentioned such problems as continuity of service, cost of transporting this gas, technological pioneering of high pressure, size of pipes, freeze-up, operating costs, size and character of the market, problems of technical efficiency, absence of conservation and others. I stated that these were factors which an investor would be concerned about and therefore I was concerned about them. These were factors to which I gave consideration in arriving at my judgment as to the rate of return for these defendants. I believe they influenced my judgment. I think undoubtedly they were given some weight. If I understand your question correctly, I would answer that the considerations there were viewed as those that might be faced by an investor in an industry having these characteristics. I believe probably most of those problems confronted defendants in 1930 and 1931. There may be one or two exceptions as to that, as far as the date is concerned; but I believe they generally reflect the conditions the company faced. I considered them to be evidences of technical problems which an investor would face in that kind of industry. I am not certain that I considered them as problems that would confront a new line rather than one already in operation. I recognized them as being those which were faced at the time this project was started and as more or less present at the present time. I think there is an element of accumulating experience, but I was not impressed with the fact that this line had matured to the point where a very satisfactory experience basis had been established. I believe I have testified in this record that the only thing that should be considered in the determina-

tion of rate of return is present day conditions. I believe that is accurate and true as a general principle. In my testimony here I have arrived at conclusions based upon present-day problems, financial, operating and other risk problems, but I gave some consideration to the problems of risk that confronted this company in 1931. I gave a great deal of consideration to these that existed then and continue to exist at the present time.

I testified at page 5728 in substance that the investor who faced the opportunity, if opportunity it be, to invest in this kind of a venture would naturally be concerned with the question as to whether it was technologically feasible to transport gas that distance. He would be concerned as to whether continuity of service could be maintained with sufficient certainty to make the enterprise profitable. He would be concerned about the fact that no one else had previously attempted to transport gas at such high pressures over such distances. I considered that circumstance in arriving at my conclusions. Some of those conditions do not prevail today.

Beginning on the same page, I testified in substance that the major question remaining for the investor would be whether or not the cost of transporting gas such distances, the very length of the haul, would not eat up the advantage of bringing the product to a market as far away as Chicago. Certainly in the absence of any well certified past experience as to what costs are likely to be, not only immediately but over a period of time in which his investment is helpless and fixed, he would most logically put it down as an investment involving such wide uncertainties as to be beyond calculation as to the appropriate degree of risk to be assigned to it. I considered that element. To a very considerable extent it prevails today. The investor probably knows today's cost as determined of transporting gas to the City of Chicago. The investor probably knows the cost for the past eight years more or less accurately. He may know what has been put into the record as to what the cost will be for the next 15 years, but I am not sure he will know what the cost is going to be. (Objection by Company Counsel overruled.)

1327 At page 5731, I testified in substance that I attempted to acquaint myself with the experiences during the period of construction and operation. I recalled as particularly interesting the freeze-ups which developed by virtue of the sudden expansion of certain gases that were

ingredients in the gas transported due to the high pressures utilized. That problem confronted defendants in 1931 and I do not understand that the problem of those freeze-ups is considered as solved. They have faced those problems during the past 8 years. I cannot say that they consider that they have successfully handled them. I understand that considerable progress has been made in handling the situation about which relatively little was known at the time. I do not know Mr. Hammerschmidt. I never heard his name. I have not read his testimony. I testified at page 5732; "Thus the effort of reaching high pressures brought with it the thing I referred to as the formation of a type of ice." I don't know that the company has completely solved that problem. I understand they have made progress in solving that problem about which little was understood at the time the enterprise was initiated. I am not an engineer, but I do not admit that I have made no independent study of any of these things to determine how they were handled. I have made no independent study of these technical factors.

At page 5735, I testified in substance that it becomes for economics not a question of whether gas can be transported from Texas to Chicago, but whether it can be economically transported, at what investment cost can it be transported; what will the operating cost be. The problem of investment cost faced the company in 1931. Defendants do not face the problem of the investment cost of the line in existence, today. They might be concerned about the cost of additional investment if they had to make additional investment to salvage the existing investment. I think they will be concerned with that problem some day. It is not a practical concern at present. I have not read the testimony concerning the salvage of the property as a whole.

I testified that "Finally the question becomes also one as to whether the potential market, which is assumed to be there and which may be there, can actually be captured in a short enough period of time to make the undertaking profitable. If an effort of this sort had to go through a five or ten year period of inadequate utilization of the investment before an adequate market was finally developed, the income foregone during that period might be so large that the price which the customers in the future would be willing to pay would never adequately compensate the investment. Thus the time factor involved becomes economically important. The market must be appraised in terms of size, the nature of demand behavior, and how long it would take

to be able actually to obtain the market which appears potentially available." That is definitely a problem which confronted the company at the time of the inception of the enterprise and is not of as great concern today. My recollection is that the company was not assured of its market at the time the line was built. The line had been substantially projected before arrangements were made for the market. Defendants knew that the line was built to serve the city of Chicago. The Chicago interests were financially interested in this enterprise.

At page 5737, I testified: "While the existence of a contractual arrangement would in all probability stabilize or establish the limits of the experience, or rather establish the nature of the experience with certain limits, yet ultimately the security behind the investment in a transportation facility of this sort is the security behind the
1328 readily available ultimate market. A contract for the delivery of gas on the basis of an amount which the market will not absorb would undoubtedly be subject to revision or compromise by failure of one of the contracting parties to be able, or to see fit, to continue to assume the burdens of such a contract out of proportion to the possibilities of the market." In making that statement I intended to imply that the contract has been a considerable protection to the investors in defendants. It is the general expectation, that when costs of production fall, producers must offer products at a lower price, or some other producer will enter the field and undersell them.

I recall discussing the wages of capital management as one of the elements of loan interest. I considered that element in my studies in this case. I used as an illustration or example the investor in a real estate mortgage, and in that connection stated that such investor would have to look into the property to see that the taxes were paid, the insurance kept up, and so forth. I think to a greater or less degree, every investor is conscious of the differences among securities in the amount of attention that needs to be given to his investment. I do not think in the case of corporate organization and stock ownership that stockholders ordinarily concern themselves with matters of that kind. I do not know of any case of a stockholder's interesting himself in the payment of taxes and such matters by the General Electric Company. I had occasion some years ago to discuss the number of disgruntled stockholder letters received by the management of a concern. They were wondering

whether the management was taking care of all the things that ought to be taken care of. They were worried about their dividends and about saliries, I believe. There were some who were concerned that the salaries to the principal officers might be too high. Investors not infrequently put their securities in the hands of institutions for the performance of these functions. A trustee of a corporate bond issue looks into those things whenever someone urges him to. I believe there has been some complaint with respect to the energy which they have displayed in respect to attending to these matters. I do not say they generally ignore them, but in my opinion they have not been as energetic about enforcing the terms of the bonds as they might have been. I think that is a small hazard.

Cross-Examination by Mr. Slaff.

You ask me if I take full responsibility for the questions that were put to me and the answers that I gave on direct examination. (Objection by Company Counsel overruled.) My answer is I do not believe I could take full responsibility for the questions and answers. I take full responsibility for the answers. I did not read my direct testimony into the record; I used notes. I carefully prepared my direct testimony in advance. Not all of the questions and answers were prepared in typewritten form before I testified; many of them were. I do not believe I can say that the questions were prepared by me. As I recall, I broke up some of the questions into parts. It was suggested that they be broken into parts. I don't recall that I supplied the linking intermediate questions. My answers were rather long. I recollect also that some of the questions had a certain amount of academic and technical language in them. I spent two or three or four days with Judge Morgan in which he asked me questions and I would offer answers. Someone was taking them down as counsel asked them. A company stenographer was there, as far as I know, all the time. There were several occasions when I proposed testimony to Judge Morgan. I think my reactions suggested the lines of inquiry in the shaping of
1329 the examination. I don't remember suggesting that, "It might be a good idea if we explored this field a little further than we had gone," because I do remember Judge Morgan rather clearly indicated or spoke of what

he was interested in. I am quite sure that at such times I did suggest, "That means this to me" or words to that effect. I was given an entirely free hand in the development of my exhibits, but I was not responsible for the scope of the direct testimony.

As to Exhibit 152, I was told to go ahead and explore the field as to the factors which would have, in my opinion, significance as quantative factors in a determination of that sort. I think I had some doubt as to whether I was expected to cover everything. I said that if it was agreeable, I would prefer to put my energies into approaches which were possibly a little different than I had used before in that sort of determination, approaches that would have some by-product value to me, to which there was general assent and agreement given. (Examiner disallows the use of the word "fair" by Counsel for the Commission in questioning the witness.) I accept full responsibility for the preparation of Exhibit 152 and for my testimony about that exhibit. When I turned that exhibit over to Judge Morgan I went over with him very briefly what I wanted to say about the exhibit. I didn't do it comprehensively, I am sorry to say. I felt not the least restrained about anything I wanted to say about this exhibit. I would like to add that at the time I got to that rather substantial exhibit, there was every evidence of pressure against time, and I moved very rapidly and at various points in my testimony interjected that I was trying to save time by short cut explanations which I thought were adequate for an analysis of the exhibit as it stood. I was under that restraint.

I don't recall any questions during my direct testimony bearing on the advantages of the natural gas industry as compared with other industries, or the advantages of this company as compared with other companies from an investor's point of view. Certainly a consideration of the advantages of a given industry or a given company is part of the mental processes of an investor in making up his mind as to the return required by him from a specific industry or a specific company, but he could do that in two ways. On pages 5544-5547 I gave you as complete a list of the books and papers as I had available. I stated, however, that I did not intend it to be necessarily complete.

I am being compensated by the company for the time that I have spent in the preparation of my testimony and in the giving of my testimony and in the conferences and

consultations with company people. It would be embarrassing to me in a way that you probably do not think of, to state the nature of my agreement or understanding for compensation; but I am willing to state it if you insist. I do not mean to foreclose it.

At times in my testimony when I have used the term "depreciation," or "provision for depreciation," I have had in mind the same thing that at other times has been referred to here as "amortization" and "provision for amortization." At other times I am not certain that we are talking about the same thing, when I use this other terminology. The term "amortization" is used with respect to the financial affairs of security issues, and I would not want to say that the terms necessarily always mean the same thing. I think an instance of where the two terms are used as having the same meaning is when counsel speaks of amortization of the investment or amortization of the value of the property over the life of
1330 the property, or over a period from now until the projected end of the property.

I testified at pages 5552 and 5553 that from the standpoint of the economic analyst, it makes no difference as to the rate of return to which an enterprise is entitled whether its securities be in the form of bonds or preferred stock or common stock, or ordinary interest bearing indebtedness like that to the banks. At page 5559 I testified that "I meant to say that the fact to be determined is at what prospective return would capital employ itself if a given enterprise were initiated under present day conditions." In making that statement, I recognize that the investors in one class of securities as compared with the investors in other classes of securities would be influenced by the arrangements under which they make those investments. I merely meant to testify that when you approach the situation from the outside under regulation, that these arrangements that they have made among themselves should not be binding on or a burden on the public. I was viewing the investment as a whole and was speaking of the informed investor.

I cannot categorically answer your question as to whether or not there would be any different return required by the investors if the capital structure of defendants was represented entirely by common stock or by 50 per cent of bonds and the remainder in stock, because in my opinion it would depend very much upon the nature of

the financial markets prevailing at the time. The financial markets today seem to preclude the issuance of anything but the highest class bonds. In my testimony on direct I was correlating my general testimony to the economic conditions and markets which exist today. If an investor were today contemplating any investment in a company, I do not believe it would make any difference whether the company were capitalized on all common stock basis, or if it were on a basis of 50 per cent first mortgage bonds and 50 per cent common stock. If defendants were capitalized on a 100 per cent stock basis, I believe the investor would go into this enterprise on an 8 or 9 per cent basis of return. He would offset the extra hazard of being in debt against the added rate of return which he could get from trading on the equity. So far as I know, the overall return ought to be the same. I believe he would go into it just as readily, if conditions were favorable to common stock financing, at the same rate of return as he would otherwise. That whole question turns on what is salable at a given time. There might not be that volume of common stock equity capital available at that time for that kind of an enterprise, and the only way the originator could get it would be to go in debt for part of it. There was no public financing in the case of defendants. Assuming that the business were to be started de novo today with the same investors, my judgment is that they would go into this enterprise on an 8 or 9 per cent basis if the capital structure of the company were represented entirely by stock, unless influenced by the bare possibility that a debt factor in the capitalization might have some tax advantage. Beyond that, with the same people making the investment, it seems to me it is almost a nominal arrangement. They have put all the money in anyhow, and what they label it does not make a lot of difference.

I have been thinking of a couple of other minor exceptions, such as the significance of a debt instrument for collateral purposes under some restrictions, and other minor factors which I do not believe are very important. As a broad over-all statement, if they were willing to go into this thing with a prospect of a 9 per cent return today, I do not see that it would make any difference whether they took part of their investment in bonds and part of it in stock. I think it is straining my testimony a little bit to say that they would be willing to go into it on an 8 or 9 per cent return basis. I said I thought a fair return was

that. Whether they would want to go into it on that
1331 basis is only answerable by them. My conception of a fair rate of return is the rate at which capital would employ itself if a given enterprise were initiated under present-day conditions. I just wanted to leave the residue of doubt as to whether the 9 per cent actually as a fact would induce this particular group to do it today. I think groups of investors are classifiable. When I was speaking of investors and a fair rate of return of 9 per cent at the conclusion of my testimony, I thought that was a fair and minimum figure to offer as a rate of return. For a group like the owners of defendants, I do not see that it would make any difference whether the enterprise was capitalized entirely on 100 per cent capital stock.

I testified in substance at page 5555 that in my opinion a fair return or reasonable return cannot be ascertained with the same degree of precision as a past return, because the latter is an experienced and the other an expected fact. Since the one involves judgment and imputation for the future, it can never hope to be precise to the same degree that an experienced past fact is. The future rate of return is necessarily a matter of judgment. I would not agree with you that men with equal good judgment and equal integrity, and with an equal desire to be fair and reasonable, can very widely on what is fair rate of return in any given field if they are exposed to the same circumstances and facts. I would be inclined to agree that they might well honestly vary. Men of equal judgment and equal integrity, and with an equal desire to be fair and reasonable, may give different weight to the same factors. One may consider different factors from those others have taken into consideration. Different people are impressed in different degrees by the same factors.

I also testified, beginning on the page last mentioned, that "neither rate base nor rate of return are ultimate ends but on the contrary are but the indispensable means to the important end, namely, the return in the number of dollars." I think it is accurate to say that the return that the investor figures on receiving today when he contemplates an investment is the return on a certain number of dollars which he invests. I am afraid there is a misunderstanding though in the question, either on your part or on my part, namely, I was speaking here of the return to an enterprise, that is, for the enterprise it is a return in a number of dollars. I made that distinction in the begin-

ning of the testimony, that I did not construe the return strictly as going to the investors, but as going to the enterprise, and to that enterprise it is ultimately a number of dollars. Looking at it from the viewpoint of the investor I think it is right, if you envision the investor as being faced with an opportunity to buy an investment at a certain price or leave it, that he determines what return he will be satisfied with when he relates that return to the number of dollars which he invests and weighs out the hazards and uncertainties and favorable aspects of his investment. Then he makes his adjustment with that price as a norm and arrives at the other elements. I agree that the investor I was talking about was the one who had a choice as to whether or not he was going to invest in this project or a project like it, or leave it alone. I merely want to make the distinction between the problem of the return to an industrial unit and the question of an investor's choice along alternative investments. The investor determines the return that he will be satisfied with when he envisions the number of dollars he will get from the enterprise, the hazards, advantages and disadvantages of that type of investment, the number of dollars that he is required to put up in the enterprise.

1332 At page 5557, I testified: "The presumption is that if the return, namely, the number of dollars, which is the vitally important thing, is to be fair or to be arrived at at a figure which would be deemed to be fair, then the two calculations which are necessarily previous to that determination would presumably also have to be fair". I had in mind legitimate processes. Theoretically, you might arrive at a fair return by over-stating the rate base and under-stating the rate of return. The investor has made up his mind as to what he deems to be the necessary return. Inadvertently, I think in the past that has been done. I did not assume that such method was used. To get it down to dollar figures, you state that the investor invests $100 and envisions and is entitled to a $6 return or an $8 return. You suggest we take $6 without prejudice. You ask me if in a regulatory proceeding subsequently thereto, and conditions have remained the same at the time of the regulatory proceedings, the rate base is fixed at $120, whether a rate of return might be fixed at 5 per cent and still return to the investor his fair return. No, I think there is a flaw in that. The $120 may be the present value of the property. I don't know whether that is im-

plicit in your assumption or not. If $100 be the appropriate fair value at the time of the investigation and $120 was inadvertently or purposely conceived, then a lower percentage applied to that $120 would give you the same number of dollars in return as otherwise. The dollars return and not the rate of return is the important thing for the enterprise. I believe the investor might have been misled if such irregular methods were employed. In other words, if the announcement came out that 5 per cent was the rate of return fixed for the natural gas industry, those who read only that far and knew only that much would be horrified, of course, and take a psychological flight from any investment in such an industry. A different situation would obtain if they got all the facts. But the chances are that they usually do not. One who is fully aware of the facts would still be satisfied with the dollars return if they measured up to what he had contemplated as dollars return to begin with, and conditions had not changed. He might well say to himself, "We got this much more in the rate base, and we did not get what we expected in the rate of return; but we came out about even".

My conception of rate of return is that necessary present or annual wages of capital or the present return to capital that would be necessary if the business of this company were to be reproduced, and not that which would be necessary to attract new capital to the business as that new capital is needed. I think the latter conception is inadequate because it is a matter of my observation and experience that the price at which you can get some new capital in may well be below what a fair rate of return would be. Thus, the owners of the equity might be called upon to make additional sacrifices under pressure for getting more capital in and the enterprise might be able to acquire that at rates which would be quite different. Thus, my conception of the rate of return is the present necessary supply price of capital. My conception of rate of return is the rate that would be necessary if the enterprise were being reproduced or purchased as it stands today in the light of present conditions. I think that either one suffices for practical purposes. My reason for my answer is that I did not mean to imply in this statement that there are theoretical conditions to be superimposed.

If the group of enterprisers were to purchase this business from those who now own it, they collectively would

demand an 8 or 9 per cent return on the value of the
1333 property. If the property did not exist and it were contemplated to reproduce this property, to bring gas from Texas to Chicago as it is now carried, the group of enterprisers who would undertake that business would demand the same 8 or 9 per cent return. That is related to the question of enterprise compensation. I think the two situations would work out the same; and, I believe I have explained that in my discussion of compensation of enterprise.

With respect to my statement that the "experienced past cost of capital of a given enterprise has nothing in particular to do with the present annual value of the capital employed," I was probably trying to recognize what you have in mind with words "in particular." By those words I meant "necessarily as such." I think I stated that if the past cost was known, under substantially similar circumstances, then it would probably be next to the best evidence of a contemporaneous bargain for that purpose, but insofar as it is remote and insofar as the circumstances are different, it fails to be good evidence. There is a distinction between the immediate past and a more remote past, or an immediate past and the present if there has been a violent change of circumstances such as the outbreak of a war, for example.

If this enterprise had offered bonds to the public at the time of its commencement I rather doubt in the light of the circumstances, whether or not the rate of interest would have been less than the 6 per cent rate which is nominally on the bonds today. The state of the bond market at that time is reviewed in my exhibit and in my testimony in connection with the exhibit. That is why I have rather grave doubts as to whether they could have sold the bonds when they got up to the point of raising capital, and moreover for retrospective valuation like that, it would have to be remembered that it was a construction project actually at the time, and the financing of a construction project in 1931 would probably have involved tremendous difficulties. It was probably a practical matter not to think of public financing at the time.

I have given some thought to the required yield on bonds of this company today if offered to the public. It would largely depend on how much capital the company would choose to raise that way, what coverage they would be able to provide. I considered the coverage that they would

be able to provide and the amount they would normally offer if they tried to raise capital in that way. That is a device which one normally employs as a sort of an experimental check to see how the situation might stand. I do not think it would be practical to think of more than a 40 per cent debt ratio; and it seems to me that to offer almost the only kind of a bond which the present market receives very favorably, would probably require a 5 times interest requirements coverage, and therefore, including the cost of financing, that is, reflecting the cost to the company as well as the yield to the investor, that that probably would be 4¼ or 4½ per cent.

I have read the report of the recent Northern Natural Gas Company financing. I do not recall the ratio of the bonds to the total capitalization but I think the coverage was something over 6:9 times. I do not recall the ratio of the debt. I know that the income coverage was very high. The yield, I belive, was about 3.25. The issue was $16,000,000, sold in August, 1939, I think. I do not have in mind what the times earned coverage would be if bonds of Natural Gas Pipeline Company were issued to 40 per cent of the capitalization of the company at 3.25. I did not think it was necessary to make that calculation. I think it advisable to find out whether this company could finance today the issuance of 40 per cent first mortgage bonds and the coupons that such bonds would have to bear, but
1334 I do not think it necessary to think in terms of the absolute quantities of bonds. I was cognizant of the fact that the Northern Natural was financing today with bonds bearing 3¼ per cent coupon rate and of the coverage required for that coupon rate. I made no attempt to determine what the coverage of Natural Gas Pipeline Company would be if it were today to finance on a basis of 40 per cent of first mortgage bonds carrying that 3.25 coupon rate. I went through a calculation on a 5 times coverage basis. I do not think it pertinent whether we think in terms of $40,000,000 or $60,000,000 situation if we have our yield and our coverage relationships.

The coverage is the income available related to dollars of yield. The dollars yield depends upon the dollars amount of bonds outstanding. You can make that calculation per thousand dollar bond just as well as per hundred thousand or million dollars of bonds. The times earned coverage depends upon the income of the company and the debt that the company might have. They must not be taken

alone. The first base is the income and the second base is the amount of debt, and the third base is the interest rate which that debt bears. With those three figures you can determine the times earned coverage, but you can take $100 as the base or $1,000 as the base, and set up 40 per cent from it as your debt. I am giving you an explanation of the principle as to how it could be done without reference to the particular volume of the debt. I did not calculate in my mind as to whether defendants could issue bonds at the rate of the Northern Natural Gas Company bonds. I did not calculate it back to a 3.25 basis. I assumed a 40 per cent debt as a 4¼ to 4½ per cent net cost to the company. On a 9 per cent rate of return, an indebtness of 40 per cent bearing 3¼ per cent interest would result in coverage of 4 to 4½.

On page 5577, I testified that "pure interest would more nearly approach the yield on as near to a riskless loan as one might be able to envision." I am not prepared to say that pure interest is synonomous with the interest on a riskless loan today. I think that is one of the ways for approximation, but as I pointed out in my testimony, you can have riskless loans or approximately riskless loans or what are considered prime loans yielding you less than 1 per cent, and also yielding you close to 3 per cent probably, and to impute to either of these rates pure interest puts you in the dilemma of explaining how you can have two different rates at the same time. While pure interest would more nearly approach the yield of as near to a riskless loan as we may be able to envision, if there are any other factors in it, then obviously the yield on that type of loan would not reflect pure interest.

At page 5579, I testified concerning enterprising capital and the necessary return to the entrepreneur in industry. In the particular instance it seems to me that all of the capital was entrepreneurial and is still so. It was not entrepreneurial capital that purchased the bonds of various natuarl gas companies this summer. I think most of them were placed with life insurance companies. To a limited extent such institutions place their funds in enterprises of that sort which are established and doing business. The entire bond issue of the Northern Natural was taken up by institutions. I do not belive that very generally the funds of savings banks or trust funds could be invested in bonds of natural gas pipelines. I do not know as a matter

of fact, but it is my impression that they might have difficulty in qualifying in the leading states as legal investments even as a type.

I am familiar with law of the State of New York as to the type of bonds that are legal investments. I under-
1335 stand there is a department of the State government that passes on a particular issue. Whether the type of investment is legal depends upon the interpretation of the law by that department. I informed myself as to the requirement of the law in New York because that is an important state. I have a statement I thought was pertinent. It is from McKinney's Consolidated Laws of New York, annotated 1939 cumulative annual pocket part, book 4 of the banking laws, section 235. I will read this paragraph: "Bonds of any corporation which at the time of such investment is incorporated under the laws of the United States or any state thereof, or the District of Columbia, and transacting the business of supplying electrical energy, or artificial gas or natural gas purchased from another corporation and supplied in substitution for, or in mixture with, artificial gas, for light, heat, power and other purposes, or transacting any or all of such business, provided, at least seventy-five per centum of the gross operating revenues of any such corporation are derived from such business, and not more than fifteen per centum of the gross operating revenues are derived from any one kind of business other than supplying electricity or gas or electricity and gas; and provided such corporation is subject to regulation by a public service commission or public utility commission, or other similar regulatory body duly established by the laws of the United States or the states in which such corporation operates, subject to the following conditions:".

I made an effort to come to a conclusion as to whether the bonds of defendants qualified as the tpye of investment under that section. The banking department of New York State will not answer a hypothetical application for qualification, but in the course of the effort to obtain such a predetermination, I did gather the opinion that a natural gas pipeline company as such could not qualify or probably would not qualify under the law. That is my opinion as to whether it would or not. I could not qualify probably as a type of investment which would qualify, because such a company, in my opinion, would not be a corporation supplying artificial or natuarl gas purchased from another

corporation and supplied in substitution for or in mixture with artificial gas for light, heat, power and other purposes. Natural Gas Pipeline Company is a corporation organized under the laws of a state of the United States. It transacts the business of supplying natural gas at wholesale. I think I know what the term "the business" means in New York. I have an opinion on that. That company is obviously engaged in the natural gas business and purchases its natural gas from another corporation affiliated very closely as a wholly owned subsidiary, a corporate fiction which might be looked through. The natural gas it supplies is in substitution for or for mixture with artificial gas, and that gas is used for light, heat, power, or other purposes. I think 75 per cent of the gross operating revenues are derived from its business of supplying gas at wholesale and not more than 15 per cent of the gross operating revenue is derived from any one kind of business other than supplying natural gas.

It is presumed that this corporation is subject to regulation by a public regulatory body duly established by the laws of the United States. Still, my opinion is they are not available as a type for legal investment. I made direct inquiry to the Department of Banking of the State of New York on that point. I had my lawyers have conversations with them so that we could talk the lawyer's language
1336 over there. There are no formal opinions, because there are no natural gas pipeline bonds legal in New York State; but I went to great pains to get the opinions of people connected with the legislation which modified the law in New York State, the opinions of lawyers for savings banks who have a great deal to do with these questions, and conferred with two of the men on the staff of the Commission itself, and on the basis of their responses, I formed my opinion.

I testified at page 5583 "I was talking about the amount of care and attention which the owner of the securities had to give to certain types of securities as compared with other types about which he might feel very much freer and certain as to the future." I made no effort to find out how much care and attention the Standard Oil of New Jersey presently gives to its holdings in defendants. My testimony was with respect to the general principle of the ingredients of loan interest for attention and concern. I did not inquire as to what any particular investor had done.

My answer applies with respect to any one of the group of investors in this enterprise.

At page 5590 I testified: "What we have in mind is simply the time and attention, the energy, care and concern which the people who put up the money give to it over and above the attention which is given by hired managers, technicians, specialists, which the enterprise itself may hire." In this instance the people who put up the money would be the artificial persons, the corporations which made the investment. It is true they function through individuals, but those individuals were their own employees and not employees of defendants. That was the burden of my distinction here. I do not know whether the time and attention of any of the individuals given to this enterprise was charged to operating expenses of an public utility company. I made no effort to find that ou I know that none of these companies are public utilities and I let it go at that. Cities Service Company as such is not a public utility. I do not know where the people who worked on this enterprise and who were a part of the Cities Service system were employed at the time they were working on this enterprise. I don't know where their wages were charged, but if they were employees of the Cities Service Company they should have been on that company's payroll. If they were not employees of the Cities Service Company but of some company in the Cities Service system, then they presumably would be employees of the company in the system and would be paid by it unless they went to to the refinement, which perhaps they should have, of dividing the time and making appropriate allocations. I do not know the facts as to those charges. I made no effort to determine the accounting procedure with respect to the salaries of those individuals. I believe the Chicago utilities who were interested in this company had people devoting time to the investment at its inception. I made no effort to determine whether their salaries were charged to operating expenses of operating utilities.

At line 14 of page 5590 I stated in substance that I thought it entirely contrary to the fact to assume that these enterprising capitalists can and do sublet all these functions of giving care and concern to the investment. By "they" I meant the people who directly or indirectly or ultimately had their funds at stake. I had reference not to the corporate intermediary necessarily, but to those people who ultimately had a substantial investment at stake.

I don't know who they were. There is Henry L. Doherty, for example, who is undoubtedly such a final person.

1337 The question asked me by Mr. Morgan at page 5588 I took to be a hypothetical question based on the record in the case. I was applyling the principle that I had been discussing to the record in this case. When I stated that "as a practical matter, if they have confidence in their own opinion and are of that class, they probably cannot find the people in whose decisions they have equal confidence," and so on, I had in mind there as a general group those ultimate investors. I did not feel called upon to specify them by name. I don't know their names. I think I had in mind the people who had a substantial financial interest —an enterpriser's interest—in the companies which either directly or indirectly made the investments in this undertaking. I did not include all of the common stockholders of the Cities Service Company, obviously. I had in mind those who had a substantial interest. By "substantial interest" I mean something in contrast to 10 or 20 shares of the small investors. I don't think I had a definite number of shares in mind. I definitely had more than 20 or 100 in mind; undoubtedly more than 200, or a 1,000; probably more than 5,000, 10,000 or 20,000. I had in mind a substantial amount. I don't recall even about what the number of shares Cities Service was at that time. A change in the number of shares makes it impossible to say 10,000 or 100,000. I had in mind the kind of an interest that Mr. Doherty might have in Cities Service. I don't think I had any individuals specifically in mind outside of Mr. Doherty whose interest in this thing from the beginning evidenced that sort of concern. I don't know that he was putting up somebody else's money. He was putting up money of a corporation in which he had a substantial interest, I belive. I don't know what that interest was. I had the impression that it was substantial in 1929 and 1930. I know it was substantial. I happened to have been involved in undertakings where it was disclosed what his interests were. I don't remember the figures. I'm sorry; that was a number of years ago. I think Henry L. Doherty typifies what I had in mind there. I did not have anyone specifically in mind. I don't know the investment distribution of the large interests in the Standard Oil Company of New Jersey. I had no one particularly in mind with respect to the Texas Company, or the Columbian Carbon Company, or the Southwestern Development Company. In the Natural Gas Investment

Company representing the Illinois utilities, there was Mr. Insull as typifying the enterpriser. I do not know what Mr. Insull's interests were in the Chicago utilities in 1929 and 1930. They were still quite substantial as I remember. I would say very substantial. Those are the only two means that come to my mind. My answer would have been the same if I had known the names of the others and it would not have been different if I had not known those two names.

When I testified at page 5591 that the performance of the function of capital management does not take the form of a transaction, and so on, I was not thinking in terms of particular individuals in your answer to that question. The question was, as you will note at lines 4 and 5, "What is the difference between cost as you have used that term and expense?" I do not believe I had anyone particularly in mind when I made that answer. I do not think the answer implies that. I had no "the individual" in mind. I might have said "an individual" and it would have been just as appropriate. I have no particular individual in mind today. I think the statement applies to most individuals who have an investment, but I did not mean it as to no individual in general.

1338 At page 5592, I testified: "The performance of the functions of capital management to a considerable extent precede the actual commitment of capital, in fact much of the work is done normally prior to an actual commitment." The people I had in mind there were the individuals who were not paid or hired employees of this concern or of the syndicates or groups who preceded it. I don't know the names of any such people. I'm quite confident there were such people. I would very much doubt whether the committees that met and undoubtedly discussed this project accounted for their time against the undertaking. Mr. Gallagher was being paid a salary some place when he was on those committees; his salary affected the net income of the companies in which there were investments by others who were the ultimate common stock entrepreneurs. I don't know whether that salary is or was at that time being charged to operating expenses of a public utility. Mr. Gallagher has been identified as having had something to do with an oil company here. The presumption is that his salary and that ultimately means his time and energy affected the flow of income of the corporate enterprise which was paying him. Directly or indirectly

Standard Oil Company is interested in some natural gas companies. The Hope Natural Gas System is a Standard Oil subsidiary. I would be very much surprised if, as a Standard Oil employee, his salary was charged down to some utility company. As to the Cities Service Company, holding companies in a managerial relationship are a different matter. I did not know that Mr. Gallagher was an executive of a public utility company as stated here by Mr. Booth. My surprise was directed at any circumstance under which an employee of the Standard Oil Company would find his salary charged to a public utility company in which they had an interest. But an employee of a public utility company in which the Standard Oil Company had an interest might well have served as Standard's representative in this early syndicate in the arrangements which preceded this company. Mr. Gallagher might have been an executive of several companies and his salary might have been divided in the light of that and his time appropriately divided. I do not know the facts.

Any given industrial unit in the electric industry, within the range of operations now envisioned, would experience decreasing costs and increasing returns. It was characterized by the possibility of lower costs to the consumers. That observation is not so true of the manufactured gas industry. I could not say how much less true it is. As to the natural gas industry, insofar as there is an element of exhaustible natural resource in it, the principle is not true, and we have more commonly to recognize that as an industry of increasing costs. When you suggest that the natural gas industry was characterized by decreasing costs and increasing returns, you are confusing two types of cost behavior. I don't know what you mean; I don't know what phenomena you refer to. I can explain the two of them to you and then you can see. Externally the natural gas industry is not so characterized. As for the gas industry as a whole, it is not so characterized in any marked degree.

I said four or five years ago that the gas industry was characterized by decreasing costs and increasing returns, and thus the possibility of lower prices to the consumer at a time when I was speaking of internal cost behavior and not external cost. I don't know whether I made that statement flatly and categorically five years ago. You will have to refresh my memory, but I am taking your word for granted. I submitted a statement to the Senate Commit-

tee on Interstate Commerce during the hearings on the Holding Company bill. The document submitted was the reduction of a speech which I allowed them to present. I don't think it is an accurate statement to say that this document was presented through the medium of the Associated Gas & Electric system. I believe Mr. Burroughs, the vice president of the Associated Gas & Electric Company or someone else, submitted my statement in a letter which was sent to the members of the Committee on Interstate Commerce of the United States Senate. I don't know that he did. I think I could have said in that document that "the gas and electric industries are characterized by decreasing costs, increasing returns, and thus the possibility of lower prices to the consumers." I cannot remem-
1339 ber a document of that sort for that length of time.

You have handed me the document and I find that you have accurately stated what I said there. I think I received a fee for preparing that document for publication; I don't remember the amount. It was a paper that I had presented in substance before the Economic Research Round Table that meets at the Bankers Club, and I think some representative of the company was there and heard it. The fee to which I referred was paid by the company. It was a paper which required considerable polishing and fixing up before it was presented as a public document which it was apparently going to be. I think that statement appeared in the original presentation before the Economic Research Round Table. The statement I made was a perfectly valid principle, and I would not dispute that I said it before and would say it again. I am not disputing that principle today. It has to be understood in its context, however. You have to understand the kind of increasing cost you are talking about before it means anything. I think the members of the Senate Committee probably would construe the terms in the sense in which I used them and not in the sense in which the phenomena develops with respect to a natural resource. I don't think I made the distinction in that paper.

At page 5594, I testified that it was my opinion that the wages of capital management did not take the form which would be readily reflected as an expense; that the appropriate way to recognize its compensation is in the return. If, as you suggest, it did take the form which would be reflected as an expense, that would not change my answer. It might be reflected as the expense of one of the corporate

enterprises in the case of an employee of such an enterprising corporation, and thus cause a reduction of the net income which that company would otherwise have. If it is reflected as an expense and changed as an expense of this enterprise, it should not be included in the return. I tried to be very careful about that. It is entirely inappropriate to charge it twice. Applying the principle to this company, the analogous period after making the mortage loan in the case used as the illustration, would be the period after the enterprise began. I had no intention of implying that any of the expenses which are normally experienced by a form of enterprise such as the Natural Gas Pipeline Company of America are appropriately to be considered in this other factor,—the added cost of giving continuing concern to the management of the investment. The expenses which would be charged are not involved in the return; it is quite inappropriate to do so, as I say.

At page 5596, I testified that I thought just as soon as the investor had a reasonably substantial interest in considering the possibilities of a given line of employment of his capital, that he would then be conscious of the amount of extra attention, concern and effort that this particular line would impose on him in the light of the return which is probably available, and he would make a comparison between that and the alternatives that would be available to him. That answer was made in reply to a question with respect to the general principle. I do not gather that it has any relationship to this particular enterprise from the part of the record I have been able to look at. I think that was a general observation with respect to a type of return which is applicable here and any other enter-
1340 prise.

You ask me as to the identity of "he", referred to in my answer. I think the term "he" is properly interpreted to refer to the corporate or individual enterprisers who were investing in that undertaking. There were no individual enterprisers investing directly in defendants. I mean the corporate enterprisers who invested directly, and the individual enterprisers who invested indirectly. The corporate enterprisers were the six corporate entities who participated in this company. The only individual enterprisers whose names I recall just now are Henry L. Doherty and Sanuel Insull. I do not agree that the two individual indirect investors are all of the individual enterprisers. I can only think of those two individuals.

There must have been others. I do not recall that I thought of others during the preparation of my testimony in this case. If I had not thought of any individuals, my testimony would have been the same.

I believe I testified at page 5605 that: "The first statement I would like to make is that it depends upon whether the enterprising capitalist envisioned the probable gains from taking these pioneering risks, whether they were entirely fortuitous or whether they were part of his inducement as a first and most fundamental consideration," and so forth. In that statement, I was referring to the six enterprising corporations and any individuals secondarily involved irrespective of my memory as to their names. The names of the individuals were not essential to the answer.

I cannot tell you today in relating that generalization to this specific enterprise anyone besides the two individuals in the six corporations who had that position of enterprising capitalist that I spoke of in my general answers. I don't know today what any of these enterprising capitalists in this particular investment or enterprise envisioned with respect to return or additional increment of return that may have been under discussion in my general answer. In the earlier part of the same answer, I stated that the answer to the question that had been asked me could not be given absolutely and categorically; that it involved an amount of economic analysis which is probably to a degree unknown except to those who engage in that sort of refined thinking.

By "those who engage in that sort of refined thinking," I was referring to economists or others who are sufficiently acquainted with it, to use a marginal approach to the analysis. Certainly, I assumed that the Federal Power Commission was capable of the necessary economic analysis or the necessary refined thinking to cope with that problem. They must have specialists capable of dealing in those terms. In fact, I know they have.

At page 5607 I stated: "Of course, assuming that there is no monopoly of the opportunity, that there is an opportunity for this competition of the people who are willing to assume these functions at differeent prices, and that there is every opportunity for free bargaining in every sense to achieve or get hold of this opportunity, the fellow who is willing to work for society at the lowest price in general and on the average gets the opportunity." I believe in

general those assumptions apply here, as I understood the circumstances to prevail in 1929.

1341 Yes, the Chicago utility interests became participants in this venture. Their becoming participants in the venture introduced an element of restraint which might be termed a practical monopoly. I merely wanted to note that I was not certain that a pipeline could not have been built to the industrial areas around Chicago without the necessary cooperation of the Insull utilities. As to whether a pipeline could be built into the industrial areas to carry only an industrial load to distribute direct to industries and be profitable and earn a 9 per cent return is a big question I don't know. I merely wanted to protect the previous answer by calling attention to that possibility. I don't think what I said is metaphysical speculation by any means. We are not engaged nor are we trying to be engaged in any kind of a speculation, but we are trying to relate ourselves to reasonable probalities or reasonable possibilities. I think there is a reasonable possibility that someone else would build a pipeline into Chicago notwithstanding those who controlled the retail market were participants in this venture.

My recollection of these proposals at that time was that there were different people considering this kind of an undertaking. I don't know about the dates as to whether they were considering it after the Chicago utility interests became participants; but it is also to be recalled in that connection that this project was undertaken and projected before the Insull interests made themselves a part of it. I think it is reasonable to say that when the Chicago utility interests joined up with this enterprise that the opportunity for someone else to participate with the Insull interests there was probably fore losed. There could have been competition for the Insull participation. I don't know whether the freedom or the lack of freedom of opportunity was dependent also upon the control of reserves in the Texas Panhandle.

I do not feel that I am competent to judge as to whether or not it could have been done from the Hugoton field in Kansas. I do not know whether the Hugoton field had been proved in at that time.

Assuming that the enterprise was to bring natural gas from the Texas Panhandle field to Chicago, the opportunity depended to a large extent upon control of reserves in the Panhandle field. My understanding is that this

particular company controls only about 10 percent of the acreage down there. Certainly, they should have attempted to obtain an adequate amount of reserves to provide adequate reserves for the city of Chicago.

As to whether there was every opportunity for free bargaining in every sense to achieve or get hold of this opportunity in this case, I think it is difficult to state as a fact. I don't know that there was every opportunity. The question there was one dealing with principle. I thought I had given a complete and elaborate answer there so that there would not be any misunderstanding as to what was involved. I purposely put in this observation to make it perfectly clear that this principle would operate under such conditions. To the extent that those conditions may be absent, the principle would not operate as perfectly. The principle could be carried to an extreme so that, in the absence of some of the conditions, it would not apply at all.

I cannot testify to everything that is in the record. I have not read it all. (Objection by Company Counsel overruled). If it could be assumed that there was a monopoly, then the principle of competitive determination of marginal returns would not operate. Of course, if the ass mption that I made did not in fact exist, then the compensation for the performance of the function might be considerably greater than that marginal necessary
1342 compensation, and I believe it is a fact that it might be more than the socially lowest cost.

In my answer at page 5608, beginning at line 9, and my answer at page 5611, line 15, I was assuming what we might term the free play of competitive forces. So then if there was not that free play of competitive forces present, then, as a pure theoretical concept, you would be doing the entrepreneur no injustice and society no harm by depriving the entrepreneur of that excess above the marginally necessary increment.

I would want to add for a degree of realism that we realize that practically nowhere in economic society does such a perfect state exist; and all practical circumstances are to an extent not representative of this pure conception. I was attempting to state the principle in as simple as possible terms in my direct testimony.

At page 5614 I testified in substance that "if it becomes the understanding of people potentially disposed to be enterprisers that there is to be no allowance of any com-

pensation for the exercise of these functions, they naturally will not be disposed to assume them," and so on. No, I was not discussing that as just a theory or academic concept. I think that is quite related to the practical realities. Continuing, I said that "as a result of that, the progress of our industrinal system would be hampered, the disposition to go into these things would be discouraged, and society would lose the benefit of the improvements; and more than that, I think it would lose the benefits of the efforts to do the things more economically which is another result of the operation of this kind of system."

I feel the railroad industry as a striking illustration of that in the United States. To an extent, I think the electric light and power industry is becoming an illustration; and to a very considerable extent, the enterprise of real estate developers and operators is being influenced in large cities. I was discussing the general principle. In addition to those I named, the urban transportation industry is an example. I think the manufactured gas industry might be included. I was speaking generally in response to a general question of the general principle of inducement. It is all pervasive. It operates in every aspect of economic behavior. The question was one of which I believe one thinks rarely in terms of an abstract principle but relates it to instances.

You are trying to get me to place my mind back at the time I was thinking those things out, which is very difficult. You appreciate it is casting back to the time when I was thinking these things out. I don't remember everything that went through my mind at the time. I did not say that the railroad industry has not attempted to apply new things or new techniques to the industry. From time to time they make a bit of an effort here and there, such as buying a few streamlined passenger trains. As to what I think of the electrification of railroads, I don't think much of it. There is considerable doubt as to whether that is an advance in technique in my judgment. It is my opinion that the railroad industry status today is to a considerable extent the result of discouragement in that industry. It has attempted to apply new things and new technique to the development of new products or new markets.

1343 The electric light and power industry had had a period of very rapid growth and splendid accomplishment. It is continually applying new things and new techniques to the development of new products and new markets; but I believe at a clearly slower rate. To some

extent it is still going forward and attempting to apply new things and new techniques to the development of new products and new markets.

I believe that socity has lost the benefit of improvements that might otherwise have been made in the electric light and power industry. In other words, I believe that the development rate has been slowed up through the discouragement of enterprise. I think undoubtedly that in the electric light and power industry there is a disposition not to go as far in capital investment assumed.

At page 5618 I testified: "There are the chances of loss over and above the calculable or approximately calcuable risks which have to be recognized, and those we choose to distinguish as uncertainties," and so on. Of course, there is a chance of the experience basis reflecting either above or below the indicated or calculable, but the probabilities are always pretty much on the above side. I understand that the actuarial calculations with respect to insurance companies are not necessarily based on their own experience, and a good many of them are using primary actuarial calculations which more recent experience has probably disclosed as obsolete. The chance of loss to the specific company might be either greater or less than indicated by the actuarial experience of the others. I just wanted to point out that many companies report a better experience than the actuarial experience, and the reason for that is that a true actuarial basis was probably not initially employed.

At page 5622 I testified: "Despite the imposition of regulation as a legal fact, entrepreneural investors still persisted in the belief that there was a chance for an enterpriser's return in those industries; and as a matter of fact the regulatory process was not imposed with the rigidity which the regulatory formula would imply in all of the States of the United States," and so forth. You ask as to whether the regulatory formula was applied in different states with varying degrees of severity. I do not like the use of the word "severity". I would answer it and say yes, that it was applied in different states at different times and the scope of that regulation was different, and the commissions probably differed in the assiduousness with which they went after the application of the legislation.

I have pointed out that regulation of the electric indus-

try started earlier in some states than in others, and was enforced more vigorously in some states than in others. The statutory provisions in some states were different from the others and bore differently upon the industry in different states. I think I meant to imply that to an extent entrepreneurs gave some consideration to these differences, but it must be recognized that there are many other factors involved as well as this one, which is only one of many considerations which probably operated to determine the comparative development in different states.

1344 There has been a public service commission in New York since 1908. In Kentucky there was no public service commission until 1934. I think that the electric entrepreneur was influenced in evaluating an investment in New York as against one in Kentucky by the fact that New York had state regulation and Kentucky did not. I think the effect of regulation in New York was to discourage investment in New York electric utilities. I do not think it had a determining influence, however. I believe it did have an effect in discouraging investment in electric utilities in New York as against similar investments in Kentucky. I don't believe it was determinative because the states are so noncomparable otherwise. That factor had some insubstantial effect in discouraging investment in electric utilities in New York state as against investment in similar utilities in Kentucky. I think, therefore, the effect was not substantial as between those particular states. I cannot say that I know of any investor who preferred to invest money in Kentucky rather than New York. That circumstance is due to the other factors involved.

I don't know the percentage of the total investment in the electric utility industry throughout the country, which is represented by New York investments in that field. It is a very substantial percentage. It might be 10 per cent or more. Consolidated Edison has big figures of plant of something like seven or eight hundred million dollars.

The observations I have made with reference to the electric industry do not apply significantly to the telephone industry. I do not think the telephone industry has been discouraged or hampered as much as the electric industry by the application of the regulatory process. I am not prepared to say how much it has been hampered. I can

not give quantitative expression to a judgment of that sort. The Bell System represents 80 or 90 per cent of the total capital invested in the telephone industry. I think it is a fact that the greatest growth of the Bell System has occurred under regulation. I do not have in mind exactly the number of states that did anything significant about telephone regulation.

Cross-Examination Interposed by Mr. Booth.

It is true that between 1920 and 1930 there was considerable litigation over the rates of telephone companies in this country. There were a great many orders entered by public service commissions and utility commissions in various states in the United States, cutting the rates of telephone companies. I have the impression that it was in a relatively few states in which the activities took place.

I have read the opinion in Lindheimer *vs.* Illinois Bell Telephone Company. I do not remember when the order in that case was entered. It took a long number of years to bring it to a conclusion. I can not say that during the pendency of that proceeding there was any retarding of the growth of the Illinois Bell Telephone Company in the State of Illinois: I have not examined it. I think there was a rather substantial growth of that company during that period. Growth and prosperity of that company was mentioned by the Supreme Court in its final decision in 1934. I am in no position to tell the Federal Power Commission that there was any retarding of the growth of the telephone industry as the result of the rate orders entered by the Illinois and the other commissions during the period 1920 to 1930. I do not know.

1345 *Cross-Examination by Mr. Slaff Resumed.*

I do not know the figure as to the number of stations in the Bell System in 1920, nor do I know the exact figures as of the present time. I have not the figures showing the investment in telephone plants in the year 1920. The figures you have stated here do not indicate any discouragement in entrepreneurial enterprise in the telephone industry. The first indication of discouragement of entrepreneurial enterprise in the telephone industry

would come in the attitude of the executives and professional employees in the industry towards the future; their spirit and attitude with respect to their jobs. I think their general spirit is the first reflection.

I think the finest sort of a test as to how an industry is going is the test of the emotional attitude of the people in it that are close enough to these large problems to be responsive to them and not whether the stockholders or security holders are putting up the money in the future. In this test you can not put your finger on it but you can put your ear to it. There is no difference as to the fact in either instance. I tried to make it perfectly clear in my first answer on the telephone business, that I did not consider that as one of the industries where this movement had come to any high point as yet, compared particularly to the electric industry. I think it has come to the point where the managerial factor is feeling a bit discouraged about the future. I think that will be reflected in a gradual departure from the employment of these companies to the more enterprising opportunities.

As to whether Mr. Gifford will leave his job, I think he has reached the age where he probably will not consider a transfer. I do not think they are going to leave the telephone system and get into something like the natural gas system. Those who are disposed to respond and leave in search of the stimuli that come from enterprise and opportunity will, if they are young enough, tend to leave those industries in which that spirit develops; and, on the other hand, those industries cease recruiting the younger people who have that type of disposition. I think the conditions as they have developed in more recent years have started a movement of that sort in the telephone industry.

As to what I think of the prospect of the telephone company for the future, I think there is a disposition on the part of the more enterprising people to leave it if they have alternative opportunities and if they are not too old. The type of individual who is responsive to the circumstances we have been discussing would lay himself open to alternative opportunities. These alternative opportunities would be in some unregulated industry. There is going to be an exodus of young enterprising spirits from the telephone industry to unregulated industry, under the conditions of my previous answers. That is what hap-

pened to the railroad industry. In my judgment there will be some exodus of young enterprising spirits from the telephone industry into unregulated industry in the future, but I have not decided how much. I think the impact has already taken place today. It is a factor that is already beginning to operate. I have talked to a great many telephone people and I have gotten the reflections of their feelings. I think the Bell System is being pretty well operated today.

1346 At page 5623 I testified: "It is only in relatively recent times that in still relatively restricted quarters there is the increased warning to the entrepreneurs and investors that this regulatory formula is going to be imposed with increasing rigidity and precision and exactness, and it is that, in my opinion, which is primarily making the investor feel that there is not going to be any chance for an adequately compensatory return." When I made that statement I had in mind the fact that the refinement of the regulatory technique was beginning in certain states, among which I could mention Wisconsin, New York and California. They were imposing regulation at an early date, and are not a good illustration of a recent trend. I think Illinois could also be mentioned. I used that expression merely to refer to it as beginning at certain places. Some people say it began in New York and some say in Wisconsin. I would not argue about that. That is spreading now to other states under the guidance of the Committees of the National Association of Railway and Utility Commissioners; and new legislation is spreading to other states. A large number of them, for example, have adopted the Committees' recommendations with respect to original cost accounting. There are implications which very much concern the informed investors and discourage them. I do not know whether I read the statements about these regulated institutions or businesses withholding their money and not expanding their businesses in the newspapers, financial journals or where, but it is my impression that they were becoming discouraged.

Such public observations as statements at national conventions of the utilities, and so on, whether they are optimistic, sales promotion speeches or other things, I do not place an awful lot of confidence in. I merely called attention to the fact that in a few places it was starting; and it was now under the guidance of the National Asso-

ciation, and to some extent as the result of the introduction of Federal regulation these newer approaches were spreading rather rapidly.

As to what Federal regulation I referred to, the Federal Power Commission is an example. I was thinking specifically of the Federal Power Commission, in relation to the electric industry. The promulgation of a classification of accounts by the Federal Power Commission put commissions in many states in an awkward position unless there was a disposition to make their requirements conform or be identical with the Federal Power Commission's requirements. I have not said that the adoption of a uniform system of accounts is discouraging to the investor. I said that the introduction of Federal regulation and the use of such a device tended to speed up the adoption of similar or identical principles in a great many of the states. It is as discouraging as the principles according to which they are proceeding. The point was merely that that was hastening the process. I think regulation under the Federal Power Commission is one of the things that has implications which are discouraging to investors. As to such regulations as the Securities and Exchange Commission makes, I think some of these regulations operate probably in one direction and some in another.

I think the requirements under the Holding Company Act are probably interfering to a considerable extent with what might otherwise be done. I think there would be considerable willingness to speculate on integrating and organizing the industry if it did not have to go through the process which it appears to have to go through. The regulation of security issues is one of the things I had in mind that probably, on net balance, was contributing something in the way of an advantage to the investor. I am very much in sympathy with the information requirements of the Securities Act. I think that when an investor in-
1347 vests in a utility security which is subject to the jurisdiction of the S. E. C., he appreciates the circumstances that the security has undergone careful scrutiny by the Commission to see whether it meets the standards prescribed in the statute. Very definite standards are prescribed in the Holding Company Act of 1935 for the protection of investors.

Going back to the problem of state regulation, I spoke of the tendency through the committees of the National

Association to adopt original cost principles, as one of the specific things I had in mind. In addition, I might add the identification of property under the acquisition adjustment accounts. The investor is frightened by that regulation because he does not know what it means. He is worried about it. The imposition or attempted imposition or attempted imposition of straight line depreciation, for instance.

The application of straight line depreciation for the telephone industry has not discouraged investors because they started early and accumulated very substantial reserves. I do not know that you can just relate the fact that that has encouraged the growth of the industry. It has been a practice which has resulted in the collection, from the customers, of substantial reserves which were available for investment in property. If that capital is more readily available than outside capital, that would be true to that extent. It would naturally contribute to the growth of the industry and as far as these funds have been available for that purpose they have contributed to or resulted in growth.

Another factor of discouragement is the more frequent rate revisions, the frequency of rate attention. Yes, I know of the Potomac Electric Company. I am familiar with the plan under which that company operates, known as the Washington plan. That requires regular annual year-by-year rate revision and it is also, allegedly, a profit sharing plan. I have a recollection in general that there have been reductions in rates from time to time since 1924 or 1925, practically every year. I do not know that the top residential rates in Washington have been reduced 30-odd percent since this so-called Washington plan of regulation was put into operation. There have been substantial reductions, both in top rates and average rates. The average rate of course goes down with the volume of consumption at the lower points in the rate schedule. The company has shared some increases in profits. I do not know that it is a fact that year by year there have been increases in profits by Potomac Electric Company, but I believe that is true. The Potomac Electric Company is an entirely different circumstance, a very different situation. I do not know that there has been no discouragement to the investor, but I know the Washington plan has operated reasonably well.

Whether the holding company gets a larger percent of

dividends on its stock in the Potomac Electric Company than it gets on any other of its subsidiaries, if true is not conclusive. I do not know whether it is a fact, but the utility is doing very well. It does not necessarily mean anything that the Potomac Electric Power Company paid something like 65% on its common stock last year with relation to dividends. I do not know it is a fact, Mr. Slaff. If you state it is, then I am willing to accept it for the purpose of discussion. I know the percentage has been high. I do not believe in this particular instance that frequent rate revisions and frequent rate reductions have discouraged investment in that utility.

I have testified that approximately one-half of various utility enterprises, including transportation and other public utilities, were not recorded as having any taxable income for the year 1930. I think it was 1930. Yes, there
1348 is a difference between the question as put and the answer as given, that is to say, between earning enough to pay an income tax and having a taxable income. I had not thought of it and did not, therefore, respond accurately to the question. I recognize that distinction. They might have an income reported or available and still have enough deductions or losses that the Internal Revenue Department would recognize that in that year they would not have to pay anything. An investigation of the Senate Banking Committee disclosed that in 1930 and 1931 various people took such large losses that they did not have to pay any taxes. They had been earning enough to pay income taxes but they had no taxable income because of deductions they could take.

I remember my testimony at page 6550, in which I said in substance that prior to regulation, defendants were industries subject to both large losses and possibly large gains, and that the history of this industry is strewn with cases of loss which make it clearly classifiable as an industry in which many lose and apparently from the records, some can make substantial gains. I was speaking from memory at the time I testified. There were companies that was doing quite well. I do not know that I have any particular company in mind. I have examined the earnings of a great many companies. I would not say that this is just a general observation with no specific application. I took the time and trouble to study the businesses in the industry. I gave particular attention to the failures and cases of receivership. That addition "apparently from

the records, some can make substantial gains" was possibly gratuitous, merely to recognize that there were those who were making money, that the other thing was not wholly representative of the industry. I put it in there just for that purpose. I did not want it understood that the whole industry was bankrupt. I merely reflected my opinion that there were instances in the industry of companies that were doing fairly well in contrast to the others. I had no particular companies or systems specifically in mind. Some were obviously doing well compared to the average run of the mill.

I appreciate the fact that you are having some difficulty in trying to understand my general observations. No, I had no specific figure or amount in mind, percentagewise or otherwise, when I used the terms "large gains" and "substantial gains." I had in mind clearly to contrast it with what I found in the portion of the industry which had not done well. I had not come to any conclusion about this particular company. This is so special that it was outside of the range of the industry as a whole.

As to whether or not those companies in the past which have sustained losses did so because they were not provided with adequate reserves, I may say that in the early history I was impressed with the instances of that. In later years, there have been probably other causes. I was not in position to identify the causes. I took the facts of failures into consideration. I made no general classification of causes with respect to my statistical studies. I could not help but think about the possible causes, but I did not have the occasion to investigate. I made no statistical studies on that point. I have enumerated insufficient reserves as one of the causes. There were undoubtedly financial causes; bad capitalization, possibly; probably there were managerial problems in some of them; franchise and market problems; competitive situations. I did not give any
1349 formal attention to these matters. My interest was the extent of the investor's actual experience, and I have more or less realized that the investor does not go too far back. I do not think this exhausts the list of causes. It probably reflects as many as I think of now, not having given any special attention to it.

(November 1, 1939.)

At page 5771 I testified: "On the basis of past behavior and present outlook, as an economist I would be very skeptical of estimates which assumed that taxes are going to

remain at the present level;" and at page 5781 I stated: "It seems to me it sums up to the reasonable economic expectation that higher unit costs of production would result in the future." I think those predictions are better than my prediction in June, 1937, as to the future course of the price level. I don't remember exactly what that prediction was. I think it was a very carefully stated analysis of what the factors and influence might be.

I don't remember whether I testified before Master Swisler on June 9, 1937, that in my opinion we were facing a distinctly rising price level in commodity prices in this country. I recall a rather extended discussion of the difficulties of forecasting and the considerations involved, and I do remember stating that I believed that the opinion of those technically trained to do that should be given more weight than the opinion of those who were not so trained. I do recall that statement. (Objection by Company Counsel overruled.)

You have shown me a document which you described as an abstract of the testimony in that case. I cannot say for certain that that is an accurate summarization; but I think if it is taken in connection with the rest of the statement, that it probably can be fairly interpreted so. I have some doubts as to how totally accurate that summary is. I recall that Mr. Booth was present during that discussion and I recall a good deal of the discussion. I have little doubt but that I probably said what is indicated in the record, but I am distinctly not satisfied at taking that one sentence out of all that was said. I have not said that I am not satisfied with my prediction in 1937. I believe it was a reasonable prediction. I am satisfied with a good deal of it. I have no doubt but what I said that among other things in response to those questions then asked me. I am satisfied that it was a reasonable estimate to make at the time. I am not satisfied with the results, no. They are two different things. I do not recall specifically the questions in that connection. I have not read the testimony.

If I read the summary correctly, I was in part skipping over the two years from June, 1937, to the summer of 1939. I made reference to the possibility of a war breaking out in 1939 in that statement. That would be one of the things which turned out to be right. I think that when I testified in June, 1937, I was intending to skip the period 1937 to 1939. If I remember the total of that discussion,

I did project my estimates to a period such as 1939 and 1940.

If I recall correctly my expectation was that a price level rise would get under way in substantial proportions within the two or three-year period envisioned there. I would have to check up on my price index chart before I would agree with you that there has been a steady decline since June 1937, the date I testified, down to the summer of 1939. I do not have that chart. I am looking
1350 at a price trend chart for construction costs of items of property that go into public utility and other industrial properties. I do not think a wholesale commodity price index is as pertinent as an index of ingredients of industrial construction. If I speak of commodity prices as an economist and a rise in the level of commodity prices, it might be presumed that I mean the general level; but, if I remember correctly, in that testimony I qualified it. I thought I saw when I quickly examined that summary a reference to construction costs. On examining the abstract, I find right here where I said "I think this applies most distinctly to durable goods". I did not say that it did not apply to goods generally. I said "most distinctly".

The Labor Bureau Index of wholesale commodity prices is generally accepted as a cost of living index. The Supreme Court of the United States, if I remember correctly, has thrown it out as an index of public utility values. I am not qualifying as a legal expert. I have an opinion as to what the legal characteristics of a public utility are. I think I made reference in my direct testimony as to what I thought they were.

I am a professor of economics in the field of public utilities and devote my time to the study of public utilities and what they are and what they do. I have devoted a very small part of my time in testifying on behalf of utilities, except in the last few weeks. A part of my time has been devoted to the preparation of that testimony. My preparation represents a very substantial amount of time in recent months; but over a year it does not represent very much time. I know more about that than I do about West *vs.* Chesapeake and Potomac Telephone Company, decided by the Supreme Court in June, 1939.

I think it is a fact that the Labor Bureau Index of wholesale commodity prices is generally accepted as a general index but it is not accepted as an index of the price levels for construction capital goods. I would have

to refresh my memory as to the figures from the time I testified down to September, 1939, shown by the United States Labor Bureau Index of wholesale commodity prices to determine whether there has been a steady decline of wholesale commodity prices during that period. I have no papers with me from which to refresh my memory. I keep up with so many things, I do not memorize them all specifically. I look at that index when I have occasion to. It is not one of the things that comes across my desk regularly. I am an economist; but economics is a big subject, and I cannot keep up with all of the things, and they do not all come across my desk. This specific thing is not regularly routed across my desk. I do not follow the Labor Bureau Index of wholesale commodity prices unless I have occasion to. I think I see it frequently enough to keep up with it. I also keep myself advised generally about where it stands in relation to other periods and other times. I am under the impression that there was a decline in the wholesale commodity price index from June, 1937 down to September, 1939. I do not remember how much. I would not want to estimate it: I can not say whether it was 1 percent, 2 percent or 5 percent.

You have handed me a paper which appears to be the wholesale price level based on 1926 as 100. It stood as an average for the year 1937 at 86.3, and the average for 1938 was 78.6. When I testified in June, 1937, it was 87.2. It went up a fraction of a point in July. Afterwards I think the decline is sufficiently regular to be denominated a steady decline to the last date shown on the index, which is January, 1939, when it stood at 76.9. This was 1351 lower than the average for the year 1938. (Objection by company Counsel overruled.)

To the best of my recollection, at the conclusion of my testimony yesterday, I set out several possible causes for losses suffered in the past by companies in the industry, among them, insufficient reserves, bad capitalization, managerial problems, franchises and marketing problems and competitive situations. With respect to the possibilities of the factors I was discussing at the conclusion of my testimony yesterday as those causing losses to companies in the industry in the past, operating on any new enterprise in this field today, I agree that there has been some improvement so far as those factors are concerned due to the presence in the regulatory field of the Securities and Exchange Commission and the statutes under

which it works, the Federal Power Commission, and the Natural Gas Act under which it works, insofar as bad financial capitalization, for example, was a cause with respect to a company that was publicly financed. I would expect that the present regulations would operate to prevent some of that, insofar as it can be foreseen by the Securities and Exchange Commission. It is necessary to recognize that the capital arrangement would not necessarily be under very much control of the S. E. C. if it were a private venture. If the financing is public in any direct way, I think they would be hampered or curbed as to what they might do. Under the limitations I have mentioned, I think the effect of the factors which we mentioned yesterday and which you have detailed to me today, has been diminished in the last several years through the agency of the S. E. C. and the Federal Power Commission and the statutes under which they work. I am rather dubious about your suggestion that this is true with reference to competitive situations, if my interpretation of the Natural Gas Act is correct. You are right that prior to the enactment of the Natural Gas Act any competing line could come in and compete without the requirement of any Federal certificate of convenience and necessity. If I understand the Act correctly, the Federal Power Commission is under obligation to consider favorably an application for such a certificate if it can be shown that service by a competitive line can be rendered at a lower price. That is my over-all impression of that part of the statute dealing with that subject. It was on the basis of that impression or understanding, plus the opinion of the Commission in the case whose name I have forgotten for the moment, in which Commissioner Manly dissented, that I predicated such testimony as I gave on that subject. It was enlightening to have had that opinion on the point and it could hardly help but influence me in some part.

So far as the Federal law is concerned, there is today a requirement that a certificate of public convenience and necessity be secured from a Federal agency, where prior to the Natural Gas Act that did not exist. I am not clear as to whether the statute provides that in such an inquiry the Federal Power Commission considers the sufficiency of the reserves for the proposed line and proposed service. I do not recall that there is anything in the legislation that bears directly on that. I believe in Opinion No. 39,

very recently, dealing with the Kansas line and the North Dakota line, the Commission did indicate that it had gone into the question of reserves for those two proposals.

I do not know that the problem of insufficient reserves and its possible effect would be considerably improved from the investor's standpoint under this new legislation. It depends on how optimistic or how liberal the Commission will be with respect to evidence on reserves. I can well appreciate that there might be some thoroughly wildcat undertaking which had no sanctions of any sort in terms of reserves which would be stopped. In the past, such undertakings were not stopped. I am not implying, however, that they were all of that character. I think there has been an improvement to the extent that this requirement for a certificate of convenience and necessity would keep that marginal type of undertaking out. I rather doubt that that is the most dangerous type of competition. Usually it is on a fairly small scale.

1352 I mentioned the possibility of a blackmail raiding line, just as a possibility. That was one of the possibilities that I considered in determining the hazards involved in this project. I think we settled yesterday or the day before that it was within the realm of possibility. I think we said we did not want to put it well up in the probability and we would leave it down around the possibility classification.

I agree with you that the possibility of a competing line going into the business with obviously insufficient reserves is reduced by the authority conferred upon the Federal Power Commission; but, as far as it applies to that wide range of possible error with respect to reserves, I do not see that the Federal Power Commission has necessarily added much. I refer to such a phenomena as underground reserves of gas and their estimation by fallible human beings.

People use difference methods of estimating reserves which bring apparently quite markedly different results. And there is a good deal of controversy as to which the appropriate method is. I think there is still a wide range with respect to the reserves which probably everyone would consider adequate to support a transportation investment. I am not acquainted with the section of the Federal Power Commission dealing with gas problems. I hope it is set up to be an expert body on this subject.

The point of my answer is that among the apparently accepted experts there is such an apparently wide possible difference that the situation still remains as I stated, and that is not inpugning the integrity or the honesty of anyone. They do seem to get widely different results.

As to the franchise problems, a number of situations could arise. A company may have an exclusive franchise or it might just have a franchise. It may have a short term franchise or it may have an indeterminate permit in effect, or it might have a long term franchise. The instances when these franchises come up for renewals are usually instances of rather sharp rebargaining as to terms. It is a type of hazard which has been unfortunately present. I would not say that it is unique to this industry. I mean it applies generally to the utility industry as a whole; in other words, there were certain things, for example, insufficient reserves, which do not apply to other types of utilities, but this franchise problem is one that applies generally to the utility industry as a whole. I can go along with you on that method of reasoning because I have used it myself. Assuming the common character, and then going into phases which differentiate it.

Referring to the effect of State regulation on this franchise problem I have always considered the substitution of state authority when it went to the extent of giving the state commission authority over the local circumstances, as being an improvement. However, we know quite well that that is not the fact in a great many states, and that state commissions unfortunately do not have as high a degree of control as we might wish them to have in that respect.

My position with respect to control is not so much what is done or the number of things that are done and all that, but is possibly directed almost wholly toward the question of how it is done and what principles are adhered to in the exercise of that authority. In other words,
1353 I do not want to be on this record as against regulation of industries that I know should be regulated, or against the scope of regulation that is appropriate and necessary. Thus, the reference to original cost accounting in our early discussion, the determination of that does not bother me nor is it something that I am necessarily opposed to. What does concern us at times is the possible

use of the authority to carry out certain principles or certain theories of regulation.

My recollection is that for certain utilities in Illinois, the local community has a considerable degree of control or power. I recall franchise disputes in the city of Chicago, in which the city took an active part. My understanding is that the franchises there are not exclusive. That observation applies to the franchise of Peoples Light and Coke Company, as I understand it. I am not familiar with any recent decisions of the Supreme Court of Illinois dealing with the existing authority of municipalities over public utilities where their franchises have expired.

In stating the times earned bond interest by the Northern Natural Gas Company at more than 6 per cent in my testimony yesterday, I think the times interest requirements went to that issue and equal and prior issues.

I testified that I did not know what the times interest coverage of defendants would be if they were financed with bonds to the extent of 50 per cent of their capital. I do not believe that defendants could be financed on the same basis as the Northern Natural Gas Company. I have given consideration to some of the factors of comparison. In the course of covering the general information on Northern Natural which is readily available, I have made mental comparisons and observations with respect to factors which are more or less favorable. I believe the original capitalization of defendants was approximately $60,000,000. 40 per cent of that amount would be $24,000,000. 3¼ per cent interest on $24,000,000 comes to $780,000. I do not have the figures as to the earnings of this company last year that would be available for bond interest. I would not want to estimate those earnings. I would have to look up the income statement and I have not made the calculation. I am not sure that it is in the form to show the amount truly available for the bonds, as it would be in case they filed a prospectus, for example.

I do not have a copy of Exhibit 136. According to this exhibit which you have just handed me for the year 1938 these companies had net earnings of $9,910,000 after taxes and before depreciation, depletion and retirements. Depreciation, depletion and retirements apparently amounted to $3,232,633, leaving net earnings after taxes and before fixed charges of $6,678,029. You have done the calculations, but I will accept your figures.

How many times earned is that on the figure of $780,000? It is 8.55 times. The financing of the Northern Natural which I had in mind was bond financing of $16,000,000. I don't recall, there may have been also an issue of serial notes. There were bank loans in connection with some of this financing, but I don't recall what it was. I don't recall in connection with that financing that there was an issue of unsecured promissory notes due serially in amounts of $500,000 semi-annually, totalling $6,000,000 and bearing 2¼ percent interest. There were such arrangements in some of these cases. I don't recall that the Chase Bank took that entire $6,000,000 issue of notes with the exception of a $200,000 participating interest to a Baltimore bank. It is my impression that a group of insurance
1354 companies took the $16,000,000 issue. I don't remember what companies they were. They were big companies, among the largest insurance companies in the country. The bond issue was relatively short as to maturity. By "relatively short", I meant to compare it to typical utility financing, which is 25 or 30 years. This issue ran to 1954, which would make it 15 years. I accepted your figures of $60,000,000 and 40 percent as illustrative. I would not presume to say what the value of the property is or what 40 percent of the value of the property would be. I don't know.

I testified at page 5777 with respect to the circumstance that, as stated by Mr. Morgan as shown by this record, 40 percent of the total volume of gas carried by the Natural Gas Pipeline Company of America is sold under interruptible contracts for industrial use, and that 25 percent of the total revenue is derived from that latter source. I have looked at the similar percentages for the industry as a whole and I have them with me. For the natural gas industry, the figure includes gas sold for electrical generation purposes. In 1938, as reported by the American Gas Association on a revenue basis, it is $126,682,000 out of a total of $416,580,000 or just over 30 percent.

In 1938 industrial and electric generation gas sales to customers amounted to 759 million thousand cubic feet out of 1 billion 213 million thousand cubic feet. That is over 60 percent by volume. So, as you put it, the industry must sell over 60 percent of its volume in order to get 30 percent of its revenues, as contrasted with these companies which must sell only approximately 40 percent of their volume

in order to get approximately 25 percent of their revenue. That is an accurate statement of the broad facts.

The natural gas industry should not be similar to a gamble in a lottery. I have some reservations, however, since certain aspects of the natural gas industry pretty nearly approach that. It should not be in that status; and the operations as a whole are hardly so designated, but there are aspects of it that seem to fall in that category: It appears to be the developing national policy to take this basic natural resource and basic industry out of the realm of wild speculation. I am not sure to what extent it will accomplish it.

(Objection by Company Counsel overruled)

I testified on direct examination that the naural gas production and transportation industry does not have the legal status of a public utility. I think the definition of a public utility from a legal standpoint is first found in Smythe versus Ames. I think it was pretty well developed in the Wolf Packing Company case, where the court decided that the meat packing industry was not appropriately designated as a public utility. This question was discussed at an early date in the Patterson Gas Light Company case, in the Milwaukee Gas Light Company case, in the Williams case, I think it is—in the effort to place oil distribution in the public utility category in the State of Tennessee—Williams versus the Standard Oil Company if I am correct, and a direct or indirect reference to this subject is given in most of the important cases involving public utility rate determination.

I think my testimony at page 5657 et sec. deals primarily with the economic phases of the legal classification. I think there are only implications there as to what economic characteristics or circumstances the law has more or less regularly recognized.

1355 One of the commonplace requisites stated at page 5657 is "a high degree of the control over the market, more or less casually referred to as a monopoly." That is one of the tests that the courts have usually looked at.

No other natural gas pipeline company has immediate access to the Chicago market. None are occupying it. There is nothing legally to prevent one from doing it. I can not say as a practical matter whether any other natural gas pipeline company has access to the Chicago market. I am not aware that any other company has legal authority from the Illinois Commission which would give it access to

the Chicago market. I do not believe any other company has legal sanction from the Federal Power Commission which would give it access to the Chicago market. As a legal matter, no other company has access to the Chicago market at the present time. I think it is more of a practical matter in view of the terms of the question. Actually no other pipeline today has access to the Chicago market. It might be a question of the actualities of today and of the possibilities of the future. I think there is that distinction. As one practical matter, no such line has access. As another practical matter, it might have some future access. At the moment no other line has access; but that is not what I have in mind as concerns the investor, which is the possibility of such a thing happening.

As a practical matter, if the Peoples Gas Light and Coke Company wants natural gas today, it must buy it from the Chicago District Pipeline Company, which in turn must buy it from Natural Gas Pipeline Company of America. I think there is sufficient uncertainty, as to what the future might develop with respect to the possibility of their buying from someone else is a consideration. I have made no calculations as to the price at which the Peoples Gas Light and Coke Company would have to buy gas from somebody else. I am not saying that there is a reasonable probability today that Peoples Gas Light and Coke Company will be able to buy natural gas from any source other than its present source during the terms of the existence of the contract between Chicago District Pipeline Company and Natural Gas Pipeline Company; but there are other considerations which must be brought into that picture before you would come to such a conclusion. I think it is something the investor would be concerned about. I think there is a possibility. I do not think the probability is great. Before I can say whether or not there is a reasonable probability, I must know what "reasonable" means.

I know what I mean when I use it, but I am not so sure that people who hear it have the same meaning that I have, and I am not sure that you have the same one in mind. I would say that it is a possible thing that is appropriately considered as a possibility. As the situation stands at the moment, there is no great probability. The reason I hesitate to use the term "reasonable probability" is that I think it implies a degree of judgment. I do not think the term "great probability" is precise. I am not making any distinction between precise thinking and refined think-

ing, but this involves factors which are outside of the realm in which refined economic thinking may well go. It involves considerations of technical, engineering and geological matters which I have to face in the same way that an investor would face them. I think if "reasonable" is construed in the sense in which I use it, that there is a reasonable probability that alternate supplies might be provided for the Chicago area.

1356 To be perfectly frank with you, Mr. Slaff, I am not in a position to calculate the technical aspects of a possible extension, for example, from the Panhandle line to the industrial area of Chicago. I think an investor looking at the situation would note that such a thing might happen. The fact that this company does not have an exclusive position and is not, under the Act, necessarily protected in its own position, together with these other observations, creates a relationship or a circumstance which the investor would give consideration to.

I have not made a calculation as to the price at which natural gas would have to be sold by someone else to Peoples Gas Light and Coke Company in order to allow the latter to buy from some other supplier. I have a number of other things in mind, however, that bear on the question, that you have not asked me about.

The contract under which gas is supplied to Chicago District Pipeline Company expires in 1946, but it is extendable at the option of the defendants for five years thereafter. I am speaking of the firm contract. I do not know about the contracts for industrial gas. I don't know whether the 25 percent of the company's revenues deprived from interruptible contracts is all derived under the short term contracts mentioned here or not.

I testified, as appears at page 5657, that: "normally, the practical economic monoply which follows from the character of the investment is recognized by the law as a legal status in addition to the economic status."

The term "legal status", as I understand it, is one's standing in law consisting of say the balance of rights and duties as a natural or artificial person. The balance or rights and duties as a legal status of defendants has not been too clearly recognized as yet. We look to decisions to tell us what it really means. New law creates uncertainty for some period of time. I think that it is accurate to say that they have attempted to identify the legal status,

but they do not call defendants a public utility, if I remember my last reading of the Act.

The point of distinction that I had in mind was that it did not appear from the legislation or what interpretations are now available, that such a legal recognition and status are granted to the units in this industry. Thus, for example, we do not have public utility situations where the legal status is rather well developed. On the contrary, there is a provision that anyone who offers to sell for less must be considered and be allowed to enter the market. There is a specific provision in the law to that effect. I think it is quite fundamental to my way of thinking. It appears to be the law. I think it is fair to say that that conception is fundamental to my thinking on the subject.

Defendants sell all of their production in the Chicago area, I believe, to the intervening company, the Chicago District Pipeline Company. I believe they sell approximately 10 percent of their production to other customers. I have the impression that those customers are along the line previous to reaching the connection with the Chicago District Pipeline Company. I don't know what prices are offered at those earlier points. I did not look into
1357 that. I do not know what the prices are for that 10 percent. I did not attempt to find out. It seemed to be a small proportion of the total.

I stated that the fact a public utility may reasonably discriminate in price among different classes of consumers, is one of the legal characteristics of a public utility. I did not make any attempt to determine whether this company could engage in such reasonable discrimination when I was preparing my testimony on the subject. I considered that 10 percent as relatively unimportant; and as this company is a wholesaler not reaching the various classes of consumers, I did not consider that that matter entered into the question. Chicago District Pipeline Company, as I understand it, purchases 90 percent of defendants' production. I don't know the names of the people who take the other 10 percent. I don't know how many customers there are that take the other 10 percent of the total production.

1358 E. M. SOLOW, a witness for defendants, called for cross-examination, testified:

(November 1, 1939.)

Cross-Examination by Mr. Booth.

It is not quite correct to say that I participated in the preparation of the figures shown in Exhibit 122. I did not prepare any of those figures. I simply suggested the valuations which were used in compiling those figures. The figures of costs and so on were taken from the records of the company by Mr. Davidson and his staff. Using those figures which they furnished us, we determined the salvage value. That was the extent of the figures which I used. I stated that my conclusions were based on the result of many years of experience in connection with the sale and purchase of oil field equipment both new and second-hand of various types.

I am now an officer of the Western Supply Company whose business is that of purchasing and selling oil field equipment. The property as to which I testified concerning its salvage value included pipe forming the casing or lining of gas wells, pipe fittings making up the gathering lines in the gas fields, the steel frame buildings at compressor stations, wooden cottages at compressor stations, water well equipment, cleaning out tools and other tools, tanks and laboratory equipment, booster station equipment, miscellaneous equipment and warehouse stock. I also testified that I agree with Mr. Taubman that the main pipe line would cost more to salvage than it would be worth. That statement applies also to the various river crossings.

I testified that the list of items appearing at pages 4077 to 4082 of the record, which Mr. Davidson stated would be non-salvagable but which were not listed in his Exhibit 122, would not be worth salvaging in my opinion. These estimates as to salvage are set forth in Exhibit 122. As I stated, I examined the exhibit generally and am in general agreement with the salvage values shown in the entire exhibit. I expressed the opinion, I believe, in connection with one or two items, that I might not have given them as much salvage as others did, and as to one or two other items I believe I explained that I had given them

some salvage value where other witnesses did not believe they had any; but I believe in the exhibit the highest salvage value that anybody gave these things is always set out.

My estimates of salvage value were based upon 1939 conditions. I tried to put myself in the position of a buyer who was offered this material, at the time I testified, as of approximately June 1, 1939. I made no effort to predict the prices or other conditions with respect to salvage which might exist fifteen or sixteen years from now, except I commented to you then, and it is still true, that in dealing with used material you are always dealing with material of some age. It might be five years old or ten years old or fifteen years old. That is what the used material business is.

1359 I think the fact that this equipment and property might be five years old, eight years old, ten, twelve or fifteen years old, or twenty years old, would have a great deal to do with the value of the property, as would the kind of use that it had—it is just like anything else. Of course you always have to consider your buyer for used property. It is very easy to sell a gas engine that has been used on a well three months and the well goes dry and the man wants to sell it. If you have one that has been used twenty years, that is an entirely different proposition. It is not worth very much. It is just like any mechanical thing. If you were buying an automobile that had been driven a thousand miles, you might consider buying it at a cost of a nice saving over the cost of a new one; but if it had gone a hundred thousand miles, you would not want it at all.

If we assume that the equipment and property had been used eight years as compared with ten or fifteen or twenty years, I think it would make a substantial difference as to what it would bring. As to how much difference, it is hard to answer that question offhand. It would take considerable study to arrive at any proper answer.

At this time I would say, if you are talking about the main pipeline system, that it would not make any difference because all of the conditions under which that line is worthless from a salvage point of view are the same whether it is one year old or twenty years old. If you are talking about an electric motor, one with eight years of use is certainly worth more in salvage than if it were

twenty years old. If you are talking about all of this property together, I don't see how I could answer that question directly without studying it. In other words, if a thing is not salvageable at all, it is not salvageable whether it has been in the ground five years or fifty years; but if it is salvageable, the age and condition of it certainly make some difference in the value. If you had the mail pipeline salvaged, it would have no salvage value either now or when it is twenty years old. If the line were abandoned and offered for sale today when it is eight years old, it would be worthless just the same as if it were offered for sale when it was ten years old or fifteen years old.

The gathering lines would have a salvage value and we have given them a salvage value here. Pipe that has been in the ground and used for eight years would probably come out of the ground in better condition than if it had been twenty years, and I believe it might have some slightly higher value. The real increase in the value would be in the machinery.

When I testified a few moments ago that the main pipe line would not have any greater value if eight years old than if twenty years old, I meant that it is an item that cannot be salvaged and put back into economic order, so what is the difference how old it is?

There might be some small difference in the value of the casing. You get out about the same amount of it when you pull it out of the well, but if the pipe is only a few years old it would have a better sale value 1360 than if it were fifteen or twenty years old. When I say "some small difference"; I think it would be a reasonable way to explain my meaning to say that I have something like five, ten or fifteen per sent as the difference in salvage in mind. In other words, if we pull pipe from twenty five wells today and the pipe has been in some of those wells five years, if it is pipe that has been made within the last five years and is recognizable as such, and it is the length of pipe that can be used, that is one thing; but if we also pull pipe twenty years old, it is much more difficult to sell that twenty-year-old pipe than the five-year-old pipe.

There would probably be much less variation in the value of steel frame buildings at the compressor stations than pipe which is in the ground where it is being rusted and

and utilized more. A steel building is an entirely different thing than a piece of pipe. A steel building twenty two years old would be worth very close to the same amount that it would if eight years old. The difference would be very small. It might be five per cent. In salvage I consider 5 per cent small, because, after all, if the material, for example, sells new for $80 a ton and sell used at $20 a ton, 5 per cent of that $20 is a pretty small variation.

I don't think it would make very much difference in the value of wooden cottages whether they were eight years old or twenty or twenty two years old because we presume they will have been kept in good order. There would be as little use for them if they were abandoned now as if they were abandoned later, and the little value that was placed on them was placed there because you could not do anything with them after they were abandoned. There would not be any market for them.

In discussing water well equipment, we discussed the motors used in connection with the pumps, and the pumps themselves. Our opinion was that these pumps would have to be left in the bottom of the wells because they were not worth salvaging. That is just as true if they were eight years old as if they were twenty two. The motors, however, would have a slightly better salvage value if they were not twenty two years old but only eight years old.

When I discussed cleaning-out tools, those are tools that are used in the Panhandle in connection with drilling operations, I made the comment that no prudent contractor would use drilling-out tools or cleaning-out tools that were fifteen or twenty years old without knowing that they were in good shape and being assured of it, because the trouble that he would encounter in using them would offset the saving in buying them. Naturally, if those tools were not as old as they might be and apparently they were in better shape than they would be at the end of a long period, they might have some small value beyond that which was given, but it would not be substantial. You might get ten per cent more for an under-reamer that was eight years old as against one that was fifteen years old. That would be about my notion of the difference in the salvage value.

There would also be a small difference in the salvage value of tanks. I think that in analyzing the laboratory equipment we should presume it was being constantly replaced and so always right up to the minute. It is not

like a tank that stands there for fifteen years with
1361 the same bottom. When one breaks you put in another one and we give, for that reason, a high value on the laboratory equipment. I do not think there would be any difference at all in the value because actually in practice you would have new material in your laboratory.

There is a good deal in the booster station equipment that had no salvage value at all, as I recall it. I think I discussed page 93 of Exhibit 122 with reference to the Cooper-Bessemer engines listed in detail on that page. At this time only one of these engines is installed. It is the engine that Mr. Wally Smith and I drove out to see in the Panhandle. There would be a difference in the value of booster station equipment as between the ages of eight and fifteen years. Of course the kind of use that it has had during the time would enter into it, because the condition of machinery always has a bearing on its resale value. It may make a great deal of difference. It is just very hard to make a generalization, because one machine may be worth ten per cent of its new price, another may be worth nothing or fifty per cent of it, depending upon a lot of circumstances.

As to the miscellaneous equipment referred to on page 4184, some of this material, like the thermometers and gauges and things of that kind, are just like laboratory equipment. They would be kept up to date. I presume that would be true of this fire-fighting apparatus, and when we value that for salvage we presume that it would be in first-class condition at all times and when the stuff was old it would be replaced by other stuff. As far as any machinery items in that equipment are concerned, it would be subject to my comment that age would cause a variation in the value of it. The difference would not be very great unless there was some reason for its being great.

The warehouse stock would be subject to the explanation that I gave on the different items that compose it. Some of it is pipe, some is fittings and some is pump parts that would have no value at all, and where that is the case it would not make any difference how old they are. If it were an item that in the general stock was improved by youth, that would be true of the item in the warehouse portion of the stock also.

As to the items that Mr. Davidson testified were non-salvageable it would make no difference whether they were

eight or nine years old or twenty or twenty three. Those items would be worthless if salvaged five minutes after they were put in. Take a road marker, for example. If the line were gone, the marker would be worthless. Take the telephone system right of way. If the telephone system were taken away, the easement or right of way would have no value. I think that is the general type of this stuff. It is stuff that you could not even give away when you want to get rid of it. Concrete blow-off pits are just a nuisance. Pipe rack foundations are always covered with oil and you have to clean them up. They are worth nothing. Curb, sidewalk, sewerage system, signs,—such things are no more salvageable the day after they are installed than twenty years after. Age has nothing to do with it. If you build a concrete road out here on the wrong section line, it is just as worthless as if it had not been built. I don't know if my answer is clear. What I meant to say is that once this money is spent and the project is abandoned, whether it is one day or ten years; it doesn't make any difference on that type of item so far as the salvage value is concerned.

1362 *Cross-Examination by Mr. Slaff.*

Yes, I testified that I have been in the business of buying and selling oil field equipment in Texas for about fifteen years. A large part of that time I have been in that business in the Texas Panhandle field. I forget just what year it was, but shortly after the Panhandle oil field was discovered I went out to Pampa and lived there four or five years. First I had a business of my own and then when the Western Supply Company arranged to enter the Panhandle I made arrangements to enter employment with them. They took over my stock of materials and I represented them in the Panhandle in trading in used materials for two or three years.

I have not dealt with Texoma or the Natural Gas Pipeline Company of America. My firm has not dealt with them. It is a remarkable thing, Mr. Slaff, but I believe that Texoma is the only concern in the Panhandle that we have never sold a nickel's worth of merchandise to under any conditions or at any time. We have never purchased any used equipment from them. We have not dealt with them at all. We handle gas equipment as well as oil equip-

ment. The same equipment goes into gas wells that goes into oil wells, except that oil wells are usually tubed and gas wells are not usually tubed unless they make a certain amount of fluid which has to be drawn off with the gas. Otherwise it is the same.

I testified that I had drilled a great many wells in the Texas Panhandle field. I suppose I am interested in about fifty wells in the Panhandle section at the present time. We have abandoned a few wells and drilled others. I think that is about as many as we have ever been interested in out there. These wells were drilled over the last ten years. They are scattered over the field from one end of the Panhandle to the other. About half of them are gas wells and about half are oil wells. We drill all our wells with rotaries, except one lease in Hutchinson County which we drilled with cable tools. As to the procedure we use in drilling in, it depends upon what part of the field we are in. We have generally used new material in our own wells. In drilling our gas wells in Wheeler County where the wells are shallow and where they are set about 1,400 feet apart, I believe we used used material on those shallow wells. In Gray County where we drilled mostly oil wells, we have used mostly new casings. I would say in about 20 per cent of our wells we have probably used used casings. In Hutchinson County I believe we have used new casings in all of our wells for the oil strings, and where we have used other strings, if we had it we used used pipes; otherwise we bought new.

I ought to know the total number of wells that have been drilled in the Panhandle field but I really don't have it in mind. I probably have seen it in print a hundred times but I have never paid any attention to it.

In the early days of the Panhandle before the rotary method was well developed, wells were drilled by the cable tool method exclusively. I was up there in that early time and we used to sell a good deal of stove pipe to put into those wells, because the operators could not get the
1363 other casing in those wells on account of the quicksand. They were expensive to drill. About ten years ago, I guess it was, they started drilling most of the wells by the rotary method and that is now the method generally used in drilling wells out there. Stove pipe is oil well pipe that does not have collars and threads and it is driven into the well with a driver. The reason they use it is that the collar does not bind in the quicksand and the

pipe slides down with the proper pressure. In the first two years in the Panhandle field I sold about 60 cars of this stove pipe. In the last ten years I have not sold, and nobody else has sold, a foot of it. It shows the change-over in the method. The bulk of the drilling of gas wells in the Panhandle field is now done with rotary tools.

According to my data on Texoma's wells, there were 39 cable wells drilled as of June 1, 1939, and 120 rotary wells, making a total of 159 wells. The company prepared for me a list of all of the wells with all of the pipe in them, but I do not find it. I was referring to Exhibit 122, page 50-A.

As appears on page 4163, I based my net salvage value per well for Texoma of wells drilled with cable tools, on 15 wells. In my judgment these 15 wells are representative of all of the Texoma cable-drilled wells. From the list of all the wells I took the first 15 on that list and added up all of their materials. I looked through the whole list carefully and the amount of pipe in those 15 wells was representative of the entire group of wells. When defendants asked me to state the salvage value of those wells, I asked them to make up a list of each of their wells with a list of all of the materials in them, which they did, and as they sent it to me the rotary wells and the cable tool wells were all in one list. I just selected the first 15 cable tool wells which were average wells. I believe I have my original work sheet on that. As stated, I looked over the list and those 15 wells were representative of the list.

On page 4161 I testified that the casing in nearly every cable tool hole is line cut. That detracts from the value of the casing when it is pulled out. I don't think that this line cut detracts from the value of the casing while the well is still producing. There is no loss of value due to that fact so long as the well is producing. The pipe is already in the well and is performing its function. After it has stayed in the well and it is grooved by the whipping of the line, it does not make any difference. It is already there and as long as it is holding out and not leaking, the pipe is doing its job and the well, as long as it produces under those conditions, is just as good as if there were no line cut. But if you pull that pipe out of the well and it has that groove in it, nobody is going to buy it. It is just junk. A pipe is no thicker than the weakest portion of it, and if a pipe has a line in it or the wall has a groove in it, it certainly has not much value for any purpose at all. You never know that it has happened until it is pulled out.

You see, pipe is built to a 700 or 800 or 1000 pound test, but when two-thirds of the thickness is found at some
1364 place in the pipe where there is a groove in it, the pipe is not good for that test any more. It is just a gamble if you want to use it at all, and no company that has any respect for engineering figures will run a line-cut pipe in a well.

At page 4169 I testified that I was buying pipe from National Tube and Republic Steel for $45.00 per ton less 10 per cent. I was referring to wholesale purchases made by the Western Supply Company of lining pipe. That is a special order. Those prices of course are at the factory. One reason for the variance in the price is that the size of the pipe makes a difference in the value, and another reason is that during the early part of last summer there was a pretty large stiffening of the line pipe market. It did not seem to reach bottom. There was a lot of competition in dealer sales. Customers were buying pipe on discounts beyond the ordinary resale list.

At page 4172 where I testified with respect to the compressor station buildings, I stated that some of them were too large for other uses. I was talking about the main compressor buildings. I said those buildings were too large to be moved around to other places in the oil fields and put into use again. They are larger than the buildings that are used in any gasoline plants or ordinary construction that goes on and would have to be cut down before being used again for that kind of a building. The smaller buildings that could be moved we gave a 10 per cent valuation, and the larger ones 5 per cent for the reason that they would have to be cut down and refabricated. You can tear the smaller buildings down, move them around and use them to better advantage. In spite of that they would have a value of only 10 per cent.

1365 W. C. GILMAN, recalled for cross-examination, testified:

(November 1, 1939)

Cross-Examination by Mr. Slaff.

Yes, in the course of my direct testimony I testified generally with respect to the comparative risks of different types of utility industry, using the latter term very broadly.

I testified that the electric industry was less risky or offered greater security than the manufactured gas industry. That is my present belief and was my belief, of course, at the time I testified. It was no conclusion I reached shortly before my testimony here. It is of long standing. It is a long standing feeling that I have had.

Yes, I then proceeded to go on to a comparison of manufactured gas distributing company with a natural gas distributing company which latter did not own its own production and transmission facilities, and I observed that the manufactured gas distributing company is safer than the latter. However, I said in that connection that from a short range point of view, the company now distributing natural gas was in a better position to meet competitive markets. Looked at from a long range point of view, you would have to take into consideration the possibility that natural gas might not be available to the company and that the change-back might be necessary.

In forming my opinion as to the rate of return, I formed it on the basis of present day conditions and looking to the future insofar as I can with any degree of certainty. I think you are correct in summing up my statement that in arriving at my judgment of a fair rate of return, I was taking the long range point of view as against the short range point of view as I have explained those two terms here.

Yes, I then went on to testify that a natural gas distribution company was safer and less risky than an integrated natural gas system, the latter being defined as a company or system owning its distribution, transmission, and production facilities. That is my present judgment. That is a conclusion I have long had. However, ones ideas change as time progresses. I do not think I had exactly the same feeling, for example, in comparing the manufactured gas industry with the electric industry in 1929. Things have taken place since that time which have caused me to have an opinion at this time with reference to the relative attractiveness of investments in the two types of business.

Yes, from there, I went on to compare an integrated system, as we have just used that term, with a company owning simply natural gas production and/or pipeline facilities, and stated my conclusion that the integrated system was a safer proposition than the one owning only gas production and/or pipeline facilities.

Yes, I then went one step further and compared natural gas production and transmission systems having a number of sources of supply with one which relied on one source of supply only, however large that source of supply may be, and came to the conclusion that generally the former was a safer investment than the latter.

Generally speaking, my conclusions from the last two comparisons I have held for some length of time. In that line of testimony, I was dealing solely with the inherent differences in risks between the different classes of
1366 business. That is one way to express it. In other words, I was assuming for the companies or systems I was comparing that all factors were equal insofar as they could be equal in comparing really different kinds of business. I was assuming that competency in management was the same; that the skill of the operating organizations was the same; that they were serving the same territory or type of territory, as the electric company in Boston against the manufactured gas company in Boston, for example; and that same generalization applies in my comparisons between manufactured gas distributing companies and natural gas distributing companies, and natural gas distributing companies owning no production and transmission facilities and integrated natural gas companies, insofar as the comparisons were possible or where the comparability could be maintained. That extends right down the line in those comparisons I made.

Some of the other factors included in these might be the same degree of soundness in capitalization; relatively the same franchise terms if a franchise should be required; the same relationship to a holding company if a holding company was in the picture; the same type of regulation; in fact all other factors were assumed to be equal.

In other words, the only difference was in the risk inherent in the different types of industry, coming about primarily because of the uncertainty of the future.

I can not say what percent of the fair rate of return I conceive to be a fair differential on account of the differences in the risk inherent in the type of industry between an electric company and a manufactured gas company without making a study on that point. I would not say what the proper rate for any particular enterprise would be, much less that covering whole industries, without very detailed studies. I can not express the differential in terms of per cent.

We have advised other people with reference to investments. I do not call myself as "investment counselor." As that term is ordinarily used, it implies a person who generally gives advice in the matter of making investments. We do not, generally speaking, hold ourselves out in any such capacity. We are financial consultants, primarily in the public utility field. We advise underwriters and institutions. We advise corporations in the development of plans in connection with the sale to the public of their securities.

I have given a great deal of thought to the difference in risk between the different types of utilities that we have just discussed. I have given thought to the reaction of the investor to these different risks. I have attempted to evaluate the difference in the reaction of an investor to securities of a manufactured gas company as compared to securities in an electric company, and to be specific I think I can point out an example:

I testified in the case of the Brooklyn Union Gas Company, an artificial gas company, that in my opinion the rate of return should be not less than 7%. In the present case, I testified that, in my opinion, not less than 8% was required. There is a concrete example of my evaluation of the risks involved and translated into percent of return which should be required by investors.

1367 I can not answer your question as to the differential in the percent of rate of return between an electric company and a manufactured gas company. That problem has been a matter of continuous thought with me. It is impossible to evaluate it in terms of actual percentage. I do not find it impossible to evaluate the probable overall in terms of percentage for this company or for the Brooklyn Union Gas Company.

I do not think I have ever come to any conclusions in my own mind as to the upper and lower limits of fair rate of return for the electric industry as a whole or for the electric industry on the average. I do not think of rate of return as a thing you can talk of for an industry. It must be considered specifically in each case. I have given consideration to a great many things in forming my opinion. I do not mean I have given consideration to a great many general concepts. I think I gave a great deal of consideration to a great many specific concepts and I came to the conclusion that there was a difference in safety in an investment in the electric industry and in the manufactured

gas industry. That is a general concept. I had no difficulty in directing my thoughts along the lines of general concepts, when I particularly said "generally speaking".

No, I can not give you any indication of the differential in rate of return that I conceive to be the fair differential on account of the differences in the risk inherent in the types of industry. I hesitate to express any differential of that character without more careful consideration. Rate of return is something that has been of some significance to me and some study by me since 1928 at least. My own activities in actual rate cases extend over a period of about one year. During that year, I have testified in the Rochester Gas case, the Brooklyn Union Gas case, and this case. My partner testified in the South Carolina Electric and Gas case, which was an electric rate case. My partner testified in the matter of rates for the electric department of the Georgia Power and Light. That makes a total of five cases in which we have participated in the last year.

I have been giving pretty intensive thought in the past year to the problem of rate of return in electric and gas companies. We have a substantial other business though. Yes, I gave that subject considerable thought while I was director of the Public Utilities Division of the Securities and Exchange Commission—more indirectly however. More directly, I gave that matter considerable thought and attention when I was in the treasurer's office of the Equitable Life Assurance Society.

No, I am not prepared, after ten or eleven years of regular thought on the subject to state in terms of percentage the fair differential in the rate of return between an electric company and a manufactured gas company because of the difference in risk inherent in the different types of industry. I have stated that generally the gas company or the manufactured gas company is, in my opinion, a riskier type of business from the investor's point of view than the electric business, but I can not tell you in terms of percent how much riskier it is. I cannot tell you in terms of percent how much more risky the manufactured gas industry is than the electric industry, nor how much more risky the natural gas distribution business is than the manufactured gas distribution business. I cannot tell you in terms other than in terms of percent how much more risky the natural gas distribution business is than the manufactured gas distribution business, except that in my opinion one is riskier

than the other. I cannot tell you how much more
1368 risky the one is than the other either in terms of per-
cent or in terms other than percent. I cannot tell you in terms of percent how much more risky the integrated natural gas system is than the natural gas distribution system which does not own its production and transmission facilities, nor can I tell you how much more risky the one is than the other in any other terms. I cannot tell you in terms of percent or in other terms how much more risky the natural gas company owning simply natural gas production and/or pipeline facilities is than the integrated company, as that term has been used here. I cannot tell you in terms of percent or other terms how much more risky the natural gas production and transmission system having but one source of supply is than the natural gas system having several or a number of sources of supply. In reverse English, my answer would be the same if you were to ask me how much safer one of the industries is than the industries with which it was compared.

Questions by the Examiner.

No sir. Those answers cannot be worked out from pages 1 and 2 of my exhibit in any way. The question Mr. Slaff is asking is to state the differential in the rate of return that would apply between two industries, one, say, an electric industry and the other the manufactured gas industry. I testified that there are differences in risks, generally speaking, along broad lines, but in forming my opinion as to rate of return I have to take into consideration one company and the characteristics of that company and evaluate the risks of that company as I see it, not only as compared with these other industries, but with the risks in other industries and other investments which are available to investors. No, I do not think you can take a combination of the data on pages 1 and 2 and work backwards by examining the characteristics of the company, and identifying any degree of risk which would attach to any one of these companies as a differential.

I think I can illustrate that in this way: The common stock of the Oklahoma Natural Gas Company is shown on page 2, having an earnings price ratio of 14.10 based on the price at 9-15-39, and earnings per share for the twelve months ended June 30, 1939 of $2.24. That company is an integrated natural gas system owning a substantial

amount of the production and buying gas also from a large number of rather small fields in the State of Oklahoma. It controls distribution facilities in Tulsa and Oklahoma City and many other large communities in Oklahoma. It is one of those companies that I have said was less risky than a natural gas pipeline company which had no distribution.

There are pipeline companies in this list owning no distribution at all whose securities are selling in the markets on a lower yield basis or a lower price earnings ratio, the reason being that there are other factors about these companies, factors such as capitalization, past earning record, the territory served, and things like that which brought down to specific cases indicate, in spite of my general belief that Oklahoma Natural is a less risky company, generally speaking, than the El Paso Company, that investors, however, because of other things which are inherent in the two situations, give them a different rating in the market. In other words, this is only one of the factors that enters into a judgment as to a proper rate of return for a particular company.

Cross-Examination by Mr. Slaff Resumed.

1369 Yes, I testified on direct at considerable length to the fact that the electric industry was safer than the manufactured gas industry, the manufactured gas distribution system was safer than the natural gas distribution system, and so on down the line, but I can not tell you now whether the difference in the rate of return that I conceive to be a fair difference because of that one factor, is one-tenth of 1% or 1% or 2% or what it is, because in specific instances, in spite of the generalization which I have testified to, I might testify that a natural gas pipeline company which had distribution facilities might be entitled to a rate of return of more than 8%, depending on the facts as I found them in that case.

If an investor should come to me and advise me that he is faced with two alternatives, an investment in an electric company and an investment in a manufactured gas company and all other things being equal about the two companies, I would not advise him as to any differential in the rate of return he should require in order to make it a proper investment for him to go into the gas business. I think it should be stated that the investor faced with this problem might take into consideration the fact that the

courts and commissions have handed down decisions in the past few years with reference to the rate of return of electric companies, gas companies, telephone companies, and water companies. That might be one indication of the differential, but I cannot state what the differential would be or should be, even if all other things are equal.

I would say that the experience of the past few years has demonstrated that investors are more willing to buy the securities of electric companies than of the manufactured gas companies. It is extremely hard to say whether the experience of the past few years would indicate that investors are more willing to buy the securities of manufactured gas distribution companies than natural gas distribution companies. I have no opinion about that.

I have kept in touch in the last few years with what has gone on in the investment market, particularly in the public utility investment market. As I have said, it is very easy from proper knowledge and experience of what is going on in this country, to take cognizance of refunding and the amount of new securities sold to the public in the last five or ten years. Everybody knows that the electric companies have gone through great refunding programs and that the gas companies have not gone through with refunding programs to anywhere near the same extent. Therefore, it is easy for me to answer whether or not investors have been more willing to buy electric securities than gas securities, but when it comes down to answering the question as to manufactured gas companies versus natural gas distribution systems, it is much more difficult to answer because the latter companies have converted, have gone from one type of gas to the other. I have no way of forming a basis for such a judgment.

I have not given consideration to the latter question in that form. I watch every security issue that comes out. I don't think that knowing the absolute amount of securities sold in recent years in either of those two classifications is of any great importance. As I understood your question, you asked me the relative willingness of investors to buy the securities of manufactured gas companies as compared with companies distributing natural gas in recent years, and I have tried to answer it. There are two unknowns and you are asking me for the differential. To determine the differential, you have to know each of these unknowns. I cannot answer your question as to whether the experience of the past few years as demonstrated by

investors is that they are more willing to buy the securities of natural gas companies, distribution, or artificial gas distribution.

Investors bought the securities of the Washington
1370 Gas Light Company two or three months ago in a substantial amount, and investors a year ago bought the securities of the Michigan Consolidated Gas. Those, as I remember it, are two of the most important securities gas distribution companies offered in the last couple of years. Both securities were bought by the public. One was bonds and one was common stock. I was familiar with both. I cannot state a differential in the investor's attitude exactly between these two. I cannot answer your questions as to the difference in the attitude of investors toward the securities of these two different types of gas companies in the past two years. I do not believe it is capable of measurement.

My answer to your question as to whether investors are more willing to buy the securities of natural gas distribution companies or of integrated natural gas systems is the same. I cannot say. I don't think you can measure any of these things by the turn-over on the stock exchange, because in the first place a great many of these companies' securities are not listed on the national exchanges. They are traded in over the counter. I do not know whether any statement of the volume would be indicative of the questions that you are asking. There may be a terrific volume at a decline in price.

You asked me if it is not a fact that when I was testifying on behalf of Brooklyn Union Gas Company about a month ago, I testified that the experience in what has gone on in the past few years has demonstrated that investors are more willing to buy securities of natural gas companies than they are of artificial gas companies. What kind of securities was I referring to? I would like to see the context of my statement in that case. I do not remember testifying in those words. I think I testified as indicated by the following questions and answers which you have read to me from the transcript in the Brooklyn Union case for September 18, 1939:

"Q. Would you say that an investment in a natural gas company is a better class than an artificial gas company like the Brooklyn Union or a manufactured gas company?

A. I hate to generalize.

Q. Oh, you have generalized all along.

A. I would say that yes, that in the past few years, experience in what has gone on has demonstrated that investors are more willing to buy the securities of natural gas companies than they are of artificial gas companies."

I think if you read the whole context there, that you will find that we were discussing bonds and the ability of companies to sell bonds. There have been in recent years many million dollars worth of natural gas pipeline bonds sold, particularly to institutional investors. While I was in the Equitable, we bought many million dollars of such bonds of short maturity with heavy sinking funds. At that time, we were not buying the bonds of artificial gas companies. Natural gas pipeline bonds were special types of securities and fitted a special position in the portfolio of the investing institution, and that is what I meant by investors being willing to buy the bonds of natural gas companies. I think that my answer to the question quoted must be read in the light of the previous testimony that I gave in that case. Yes, I knew that any answer I might give you now would be read in the light of my previous testimony. In my original testimony here, I testified to just what I told the Examiner a few moments ago concerning this balancing of securities in the portfolio of institutional investors. I think I recollect that he stated that during the last five years, institutions had bought very large amounts of bonds of natural gas pipeline companies.

1371 The Brooklyn Union Gas Company is an artificial gas company. I have testified in their behalf on the rate of return. I have not received a fee in that case as yet. I have contracted for a fee but have rendered no bill for my services. I have no doubt whatever about receiving my fee from that company. I had no hesitation in testifying in that case that "in the past few years, experience in what has gone on has demonstrated that investors are more willing to buy the securities of natural gas companies than they are of artificial gas companies."

If we add up the amount of securities sold in the last ten years in two columns, one natural gas companies and the other artificial gas companies, I have no doubt that under the column on natural gas companies the amount would be greater, and I have no doubt that investors are more willing to buy the securities of natural gas companies than they are of artificial gas companies. I don't think I had any such doubt ten minutes ago. I did not express an opinion on that. I did express an opinon as to that in the

Brooklyn Union case. I do not think the same question was put to me here.

Yes, on Friday before I left the stand, we were discussing the recent financing of the Public Service Company of Colorado. I remember that discussion. I remember that it was approximately in November, 1938 when that company first filed a declaration with the Securities and Exchange Commission. That declaration was subsequently withdrawn and a new declaration was filed. The second was filed several months ago, I don't remember the exact date. I think the reason for the withdrawal was to reshape the original proposed plan of financing. I have no intimate knowledge of it. The financing now is on a little different basis than it was then.

I assume that after the withdrawal of the first statement and the filing of the second statement or declaration, conferences were held in the usual course of business, as they are in the Securities and Exchange Commission, between the officers of that company and the staff members of the Commission. I think I know from my own knowledge that there were conferences.

An informed investor reading the S. E. C. release on that financing, would observe a statement in there with respect to the life of the Amarillo field. If interested an in investment in the Amarillo field, he might try to procure from the public files of the S. E. C. the data behind that statement in the release. I am not sure that he would. Some might. I happen to know people who were willing to buy the bonds of that company when they came out, and to my knowledge they never requested such information from the S. E. C. Some people might have.

An informed investor of the type I had in mind when I was discussing informed investors in my direct examination might, upon seeing the statement of the S. E. C. to the effect that the life of the field was estimated at 25 years or thereabouts, attempt to find out from the public files of the S. E. C. what was back of that statement. (Objection by Company Counsel overruled.) Not all people think alike. Some people might have gone to the S. E. C. and asked if there were a complete report by the Ralph Davis firm. I think I can probably generalize and say that the man who has more information is the better equipped. But I may say that I believe there are informed investors who would take up their position as to an investment of this kind in a substantial amount without going to the files

of the S. E. C. although I think it is right to say that the investor who sought the information more closely approximates the informed investors I have in mind.

I made no effort to find out from the S. E. C. what 1372 was back of that statement which you read to me from the release on the Public Service Company of Colorado's financing. This release came out in August or the beginning of September. Of course, I had seen the prospectus part containing the letter when it was filed in 1938.

(At this point Exhibit No. 155 was withdrawn and a document described by counsel for the Commission as a certified document embodying what was offered in Exhibit No. 155 was produced by counsel, with the request that it be marked for identification. At the direction of the Examiner, the document referred to was marked Exhibit No. 155 for identification. EXHIBIT NO. 155 was received in evidence over the objection of counsel for defendants, who were allowed an exception.)

Questions by the Examiner.

In response to questions you previously asked me, I stated that, in my opinion, an investor in the bonds of Public Service Company of Colorado might well look at the statement in the prospectus and the registration statement and even might go to the Securities and Exchange Commission for additional material. That entire statement was with reference to an investor. As a part of my duty in determining a proper rate of return in this particular case, I satisfied myself that the gas field would last at least fifteen years, and I was not concerned beyond that period. I assumed that the Federal Power Commission or the proper authority will determine the proper amount of amortization and that was my assumption in my testimony as to rate of return.

In assuming a life of at least fifteen years and assuming that the Federal Power Commission establishes amortization, my point is that, even though there is a maximum life, there is a risk that the field might go down before that fifteenth year is met. That is a possible hazard.

(Counsel for the Commission then produced a document which he described as the facing sheet of the same registration statement as contained in Exhibit 155, together with page No. 62 from said registration statement, with the re-

quest that it be marked as an exhibit. At the direction of the Examiner, the document was marked Exhibit No. 158 for identification. EXHIBIT NO. 158 was received in evidence over the objection of counsel for defendants, who were allowed an exception.

Counsel for the Commission then produced a document described as the facing sheet contained in the registration statement filed with the Securities and Exchange Commission August 30, 1939, by Public Service Company of Colorado pursuant to the provisions of the Securities Act of 1933 as amended, under file 2/4180, and pages 5 and 6 as contained in said registration statement. At the direction of the Examiner, the document was marked Exhibit No. 159 for identification. EXHIBIT NO. 159 was received in evidence over the objections of counsel for defendants, who were allowed an exception.

Counsel for the Commission then produced a document which he described as a certified copy of the facing sheet of the same registration statement referred to in connection with Exhibit No. 159, together with page 57 of said registration statement. At the direction of the Examiner,

the document was marked Exhibit No. 160 for identi-
1373 fication. EXHIBIT NO. 160 was received in evidence over the objection of counsel for defendants, who were allowed an exception.

At this point, at the direction of the Examiner, the reporter copied in the record the following statement beginning at the bottom of page 4 and continuing on to page 5 of Exhibit No. 155:

"Ralph E. Davis, Inc., oil and gas experts of Pittsburgh, Pennsylvania, have prepared a report, dated November 18, 1938, concerning the natural gas reserves from which the company's supply is obtained. Such report follows:

Ralph E. Davis, Inc.
Engineers

Petroleum and Natural Gas
Pittsburgh

November 18, 1938.

Mr. Guy W. Faller, Vice Pres. & General Mgr.
Public Service Company of Colorado,
Denver, Colorado.

Dear Sir:

In response to your request, you are advised that from time to time we have made examinations of the gas reserves of the Texas Panhandle Field, including studies of the properties of all of the principal companies producing natural gas in that territory, as a result of which we are generally familiar with the operations in and the probable ultimate production of the area.

The Panhandle Field comprises more than 1,400,000 proven acres, including sour gas acreage, and has been recently estimated to contain a reserve of more than 15 trillion cubic feet. At the 1937 rate of withdrawal for all purposes this is equivalent to more than a 25-year supply.

The natural gas now being furnished to Public Service Company of Colorado by Colorado Interstate Gas Company is obtained by the latter from its affiliate the Canadian River Gas Company which holds a leading position in the Panhandle Field. We are generally familiar with the location of the acreage there held by the latter company.

While we have made no specific examination of the property and business of the Colorado Interstate Gas Company and Canadian River Gas Company for your account, we are able to state from our own general knowledge that the acreage and gas reserves of the latter are ample to supply the gas requirements of the Public Service Company of Colorado and its subsidiary, Colorado-Wyoming Gas Company, and insure the continuance of this service for at least 20 years.

Very truly yours,

Ralph E. Davis, Inc.
By Alden W. Foster
Vice President.").

1374 *Cross-Examination by Mr. Slaff Resumed.*

Exhibit 158 indicates that during the 12 months' period ended September 30, 1938, Mr. W. Alton Jones was vice president and director of Public Service Company of Colorado. The footnote indicates his remuneration, and that it came from the Cities Service Company. The Cities Service Company is one of the substantial holders of defendants' securities.

From Exhibit No. 160, it appears that Mr. Jones continued as such director and officer until July 13, 1939. Exhibit No. 159 also contains a letter signed by Ralph E. Davis, Inc. by Alden W. Foster, Vice President.

(At this point an extract from Exhibit No. 159 was inserted in the record by the reporter at the direction of the Examiner. This extract sets forth the same letter bearing date of November 18, 1938, as that copied into the record from Exhibit No. 155 at pages 7268 and 7269.)

Yes, I testified on direct examination that the Equitable Life Assurance Society had purchased bonds of Northern Natural Gas Company while I was with the Equitable. That was an issue of $16,000,000 of which Equitable took $4,000,000. I do not know how many of these bonds were outstanding as of the summer of 1939. There were some additional bonds sold and a sinking fund operated on the bonds. I should judge that the amount outstanding as of this summer was probably more, but I would not think a great deal more.

Some additional bonds were issued after the first private deal was arranged. Those were 4¼s that the Equitable bought. The original contract was for 5%, but when the actual deal was closed, the coupon rate was fixed at 4¼%. I have not kept track of the exact amount of these bonds which were outstanding as of the summer of 1939. They had been refunded by the Northern Natural Gas Company. I do not know the amount of the refunding issue. It was somewhere between $10,000,000 and $20,000,000.

Northern Natural engaged in a financing operation very recently. They sold some short term notes. I do not remember the amount of those notes, but should guess that it was between $5,000,000 and $10,000,000.

I think from memory that the maturity date of the bond issue was 15 or 16 years from the date of issue. The purchasers were a slightly different group than the group that

bought the original issue. The Metropolitan was one of the large buyers, Equitable and Prudential were others. There were a number of large life insurance companies involved in the deal. Within certain limits, it is usually the case that under such circumstances, the buyers practically set up the terms of the bonds.

The fact that the bonds were issued for a maturity of 15 or 16 years would indicate very definitely that the purchasing companies expect the Northern Natural Gas Company to be in existence well beyond July 1, 1954. I think it is a fair statement to say that they would
1375 expect it to be in existence at least 5 years beyond 1954. I can say definitely upon my own experience with Equitable that they would not buy the bonds unless they were convinced that the operations would go 5 years beyond the maturity of the bonds. Any other estimate would be speculation on my part. When an institution is convinced in its own mind that an enterprise will last 5 years at least beyond the maturity date of certain obligations, it is fair to say that they might have a reasonable expectation that the enterprise will last more than 5 years beyond that maturity date, but it must be remembered that in this instance they were buying mortgage bonds with a maturity in 1954 and with a very heavy sinking fund.

I cannot say what is in the mind of any one of these institutional buyers with reference as to how long the Northern Natural Gas Company is going to be in business. I am confident that they would believe that it is going to be in business 5 years beyond the maturity date of the bonds. I do not think I have anything to add to what I have already said on that point.

In my direct testimony at page 5394 I spoke of the Northern Natural Gas Company as a pipeline. I added that it owns or controls directly or indirectly some substantial distribution facilities. I also testified that at the time Equitable purchased the bonds this circumstance was considered an element of strength. I am not sure that it owns any distribution facilities directly. I think the distribution facilities are owned indirectly through the ownership of wholly-owned subsidiaries. I do not know how many of such subsidiaries there are. I have known the names of these subsidiaries from time to time, but I do not carry them in my mind.

When I said it had "substantial distribution facilities," I meant it received some substantial revenue from those

controlled distribution facilities. I do not mean 50% or 25%. I think I would say 10% or something like that. That is my conception of the term "substantial" as I used it there. I think at one time I knew the relationship between the plant account of the subsidiaries and that of the parent Northern Natural. I do not carry the figure in my mind.

The revenues received from the domestic and commercial service for the 12 months ended June 30, 1939, amounted to $1,600,000, and the revenues from industrial sales to about $2,900,000, or a total of about $4,500,000 compared with a total gross of about $10,000,000. That is the amount of revenue received from direct sales as opposed to other sales which are called "town border sales", amounting in the aggregate to about $6,000,000. From this, I draw the conclusion that the subsidiaries are substantial and that substantial revenues are received directly through those substantial controlled by the company.

The total percentage of gas which Northern Natural sold last year to its subsidiaries would be less than 10%. As a matter of fact, it was about 5%. Of course that gas is sold at a different rate than certain other gas is sold.

I have no doubt but that in connection with my general duty of keeping advised as to matters of interest in the public utility financing field, I, or some member of our organization, read the S. E. C. release on the Northern Natural Gas Company.

(At this point, counsel for the Commission requested that Release No. 1667 of the Securities and Exchange Commission under the Holding Company Act in the mat-
1376 ter of Northern Natural Gas Company, be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 161 for identification.)

Exhibit No. 161 is a regular release of the S. E. C. under the Holding Company Act, containing the findings and opinion of that Commission in the matter of Northern Natural Gas Company. It is in connection with the recent financing operation we have been discussing. In addition to refinancing the existing indebtedness, they were getting some new money, amounting to approximately $6,000,000.

Yes, it appears from the bottom of page 5 and from page 6 of that release, that an informed investor would have learned of the fact that "the company's depreciation problem is fundamentally related to the probable future life of the gas fields from which its sources of supply orig-

inate. For such determination, the company employed Ralph E. Davis, Inc., petroleum and natural gas engineers, to undertake a study of the natural gas supply available to its pipeline system from acreage which is owned or covered by purchase contracts as of May 1, 1939". (Objection by Company Counsel overruled.) The informed investor coming across that statement in this release might be interested in finding out what was back of the Commission's statement. Exactly the same answer I have already given applies in that respect. An informed investor could come to Washington or write down for photostatic copies of such documents as might bear on that statement.

(EXHIBIT NO. 161 was offered and received in evidence over the objections of defendants, to whom the Examiner allowed an exception.

The reporter, at the direction of the Examiner, copied into the record the following extract from Exhibit No. 161:

"The Company's depreciation problem is fundamentally related to the probable future life of the gas fields from which its sources of supply originate. For such determination the Company employed Ralph E. Davis, Inc., petroleum and natural gas engineers, to undertake a study of the natural gas supply available to its pipe line system from acreage which is owned or covered by purchase contracts as of May 1, 1939. The report was based upon data furnished by the Company, as well as upon the general familiarity of the firm with the fields and properties gained during previous studies. The conclusions reached were as follows:

(1) The company's position in the Panhandle and Hugoton Fields is such as to assure it, at reasonable cost, of its natural gas requirements, as indicated by present deliveries and with due consideration of the anticipated expansion of its facilities and increased market requirements for a period of more than 25 years.

(2) The properties wno owned by Northern in the Panhandle and Hugoton Fields, together with gas reserves controlled by virtue of gas purchase contracts in these two fields, are in our judgment capable of furnishing this total gas requirement of the Northern system.

(3) The reserves controlled in the Otis Field, while small in total quantity as compared to the reserves controlled in the Amarillo and Hugoton Fields are of importance from an operating standpoint.

The Company's present depreciation policy, 3½% per

year or stated in terms of probable life of its plant, 29 years, compares with the Davis estimate of over 25 years for the life of the gas fields."

1377 Counsel for the Commission then produced another document which the Examiner directed the reporter to mark Exhibit No. 162 for identification.)

An informed investor seeking to acquaint himself with what was back of the statement contained in the S. E. C. opinion, now in evidence as Exhibit 161, would find the document marked Exhibit 162 in the public files of the S. E. C.

(Counsel for the Commission then offered EXHIBIT 162 in evidence. The exhibit was received in evidence over the objections of counsel for the defendants, who were allowed an exception.

At the direction of the Examiner, the reporter then copied into the record from Exhibit 162 the following language:

"Ralph E. Davis, Inc.

Engineers — New York, 150 Broadway

Petroleum and Natural Gas
1710 Union Bank Building
Pittsburgh

June 1, 1939

Mr. B. R. Bay, President,
Northern Natural Gas Company
Aquila Court Building
Omaha, Nebraska.

Dear Sir:

In accordance with your request we have made a study of the natural gas supply available to the company's pipe line system from acreage which is owned or covered by purchase contracts as of May 1, 1939. Our study is based upon data which have been furnished to us by the company, as well as upon our general familiarity with the fields and properties gained during previous studies.

The company's gas supply is obtained principally from the Panhandle Field of Texas and the Hugoton and Otis Fields of Kansas, as follows:

1378 Gas Requirements and Sales

*M Cubic Feet

Year	Requirements				Total	Sales
	Panhandle	Hugoton	Otis	Other		
1934	12,338,444	12,502,638	444,265	1,283,030	26,568,377	25,578,650
1935	13,470,017	12,766,374	4,672,071	1,199,748	32,108,210	31,189,005
1936	18,123,922	13,396,452	4,402,651	1,201,774	37,124,799	34,872,065
1937	20,956,418	13,888,741	3,374,564	1,221,641	39,441,364	37,514,817
1938	22,365,518	13,570,331	3,043,127	1,035,896	40,014,872	39,838,590

* All quantities stated herein are at a base pressure of 16.4 pounds absolute.

During the past three years approximately 90 per cent of these requirements have been purchased from other operators.

Since 1934, the growth in the company's business has been substantial. With the construction of the contemplated new facilities, a further increase in volume of sales has been estimated by the company, as follows:

1379

Year	Estimated Increase in Sales During Year M Cubic Feet	Cumulative Estimated Increase Over 1938 Sales M Cubic Feet
1939	3,360,000	3,360,000
1940	2,700,000	6,060,000
1941	900,000	6,960,000
1942	900,000	7,860,000
1943	900,000	8,760,000
1944	900,000	9,660,000

In the present study we have estimated the gas reserves of the Panhandle Field as of July 1, 1938, this being the latest date when rock pressure data for the entire field are available. Withdrawals during the 2½ years preceding that date and total accumulated withdrawals have been as follows:

1380 Gas Withdrawals from the Panhandle Field.

M Cubic Feet

	Dry Gas				
	Sweet Gas	Sour Gas	Total Dry Gas	Casinghead	Total
Prior to Jan. 1, 1936 (Accumulated)					5,001,052,133*
Jan. 1, 1936 to July 1, 1936.	132,861,838	79,248,891	212,110,729	66,822,102	278,932,831
July 1, 1936 to July 1, 1937	238,315,448	160,330,446	398,645,894	132,884,118	531,530,012
July 1, 1937 to July 1, 1938.	240,060,100	215,540,850	455,600,960	109,542,946	565,143,896
					6,376,658,872

* Estimate made in 1936.

1381 The accumulated withdrawals prior to 1936 include excessive wastage which occurred upon completion of wells during the early history of the field and also during the period from 1933 until the early part of 1936 when the unrestricted use of dry gas for "stripping" operations was permitted, hence this figure includes a substantial quantity of estimated production. On the whole, the stated accumulated quantity is believed to be conservative.

The rock pressure of the field which initially was 430 pounds had declined by reason of the above withdrawals to an average of 337 pounds as of July 1, 1938. For a number of years we have from time to time prepared estimates of the gas reserves of this field based upon the withdrawals and decline in rock pressure. Based upon our present study the remaining reserves of the field as of July 1, 1938 are estimated to be in excess of 18 trillion cubic feet, which estimate is in line with our previous conclusions.

Recent annual withdrawals for all purposes are less than 600 billion cubic feet, indicating a future life for the field on the basis of present production of approximately 30 years.

The company obtains its requirements from the Panhandle Field under purchase contract with Phillips Petroleum Company (Independent Natural Gas Company), Hagy, Harrington and Marsh, and J. M. Huber Corporation, supplemented by its own wells and acreage.

The Phillips supply is furnished from the residue of six gasoline plants operating on dry and casinghead gas obtained from wells in Gray and Wheeler Counties. Gas

processed in these plants during the last half of 1938 averaged 97 million cubic feet per day. After deducting gas used in plant and lease operations, less than half the remainder was required to fulfill deliveries provided in the contract with Northern Natural Gas Company—32 million cubic feet per day or 11 billion cubic feet per year. The balance of the Phillips residue from these plants is sold for carbon black manufacture. Although under the contract, after February 1940, Phillips has the right to reduce its deliveries to Northern, we are of the opinion it will be to Phillips' advantage to continue to make deliveries to Northern even after the present contract has expired, probably for the remaining life of the Panhandle Field.

The properties of Hagy, Harrington and Marsh and J. M. Huber Corporation covered by purchase contract with Northern, and the principal portion of the company's own acreage in this field are located in western Gray and eastern Carson Counties, as follows:

	Carson County	Gray County	Total Acres
Hagy, Harrington and Marsh	21,663	11,577	33,240
J. M. Huber Corpn.	4,280	....	4,280
Northern Natural Gas Company	12,860	5,729	18,589
Total	38,803	17,306	56,109

The purchase contracts and company leases extend for the life of the production. With exception of ap-
1382 proximately 2,000 acres of Hagy, Harrington and Marsh leases and 1,100 acres of company leases, the above is located within the present proven limits of the field. As such, depending on surrounding development and upon the degree of uniformity of reservoir conditions within the general area, it is subject to the rate of depletion experienced by the whole. In 1938 Northern Natural Gas Company's withdrawals from this field were 22.3 billion cubic feet and we anticipate a gradual increase to possibly 25 to 30 billion cubic feet per year.

The acreage and gas reserves controlled by Northern under its own leases and purchase contracts are sufficient to assure this company of its anticipated requirements from this field for a period of more than 25 years. * * *

Ralph E. Davis, Inc.,
By Ralph E. Davis,
President.")

I read the release of the S. E. C. which you have offered here. I did not go down to the S. E. C. and examine any of the documents you have offered from the files of that Commission.

In my direct testimony, page 5405, I testified in substance that a refusal by the S. E. C. to allow a declaration to become effective or to allow the issuance of securities, is a pretty good indication that the securities are not of a quality which should be sold and made available to the public. As a matter of fact, securities subject to the filing of a declaration cannot be sold until the declaration does become effective. That is the kind of securities I was talking about in that answer, those that are subject to the Holding Company Act. Such securities, as to which the S. E. C. has refused to permit a declaration to become effective, cannot be sold under the laws of the United States.

I have stated that I thought that the fact that such applications were approved by the Commission was of substantial influence in the minds of investors in persuading them that securities may be desirable to purchase.

The defendants are not subject to the Public Utility Holding Company Act of 1935. They are not at this time subsidiaries of a registered holding company. Southwestern Development Company is a registered holding company. When I say that Natural Gas Pipeline Company is not a subsidiary of Southwestern Development Company subject to the terms of the Holding Company Act, I mean that there is an application pending for a declaration by the Commission that it is not a subsidiary of that company and I think of some other companies. By that I mean that they are applying for a declaration that they are not subject to the Act. According to the statutory provisions contained in the 1935 Act, defendants, prima facie, would be subject to it.

As far as I can answer your question offhand, I do not think that the subjecting of the electric industry to the regulation of the S. E. C. under the 1935 Act brought any additional risk to investors. It may affect investors over a period of time. I think that, generally speaking,
1383 the statutes under which the S. E. C. operates tend to make available more information to investors and in that sense they get additional protection. It should be remembered, however, that there are certain sections of the Holding Company Act about which there is a great

deal of controversy and many people believe that investors may suffer losses. I have in mind particularly Section 11 of the Act.

The same considerations would apply to the segment of the gas industry which is subject to the Securities Act, both the 1935 Act and the 1933 Act.

You have asked me to point out the operating companies and the holding companies listed on page 1 of Exhibit 150. Arkansas-Louisiana Gas Company is an operating company. Columbia Gas and Electric Corporation is a holding company which owns practically 100 per cent of the securities of the subsidiaries. North Penn Gas Company is, I think, an operating and holding company. Panhandle Eastern Pipe Line Company is an operating company. Southern California Gas Company is an operating company. Southern Counties Gas Company is an operating company, and Southern Natural Gas Company is an operating company and holding company.

Considering both defendants as a single enterprise, such enterprise is an operating company.

I have not made any attempt to determine the average yield of the bonds shown on page one of that exhibit. I may have in my office added them up and divided by 8; but I did not consider it proper to attempt to arrive at an average yield in this instance although I have no particular idea at this time why I felt that way; I just did not. I do not know whether the average weighted yield would be of any more significance than the average yield. They would be different.

I do not think it is necessary to a determination of a fair rate of return to have either the weighted or the simple average of these yields. It is easy enough to do it. If I had thought that it was necessary to do so, I would have done it. At the time I prepared the exhibit, I apparently did not think it necessary and therefore did not do it. I do not think it would be helpful to do so. Everything you do provides more information, but I do not think it is necessarily more informative. There might be a tendency towards misleading conceptions.

I did not make any attempt to determine the average yield for the operating companies alone, nor for the holding companies alone. You have asked me to state the Moody's rating and the call price as of September 15, 1939 for each of the bonds shown on page one of Exhibit 150.

Arkansas-Louisiana Gas Company, Moody's rating "A"; callable, 101½.

Columbia Gas and Electric Corporation, rating "Baa"; callable at 104.

Lone Star Gas Corporation, Moody's rating "A"; callable at 105.

North Penn Gas Company, Moody's rating "A"; callable at 104¼.

Panhandle Eastern Pipe Line Company, Moody's rating "A"; callable at 102½.

1384 Southern California Gas Company, Moody's rating "Aaa"; callable at 104.

Southern Counties Gas Company, Moody's rating "Aa"; callable at 101½.

Southern Natural Gas Company, Moody's rating "Baa"; callable at 105.

I testified earlier that I did not purport to be an investment counselor but that I am a financial consultant. It does not appear to me particularly strange, when you know all the facts, that at the time I prepared this exhibit the "Aaa" Southern California Gas Company bonds were selling at a 4.07 yield against a yield of 3.06% on the Lone Star Gas Corporation's debentures rated "A". It often happens that a particular bond with an "Aaa" rating will sell at a higher yield than an "A" rated bond in view of the maturity of the respective issues. In this particular case, the call price of the Southern California bond is 104, and the bond noted here has a price of 106¼. This bond has a yield of 4.07 against the yield of 3.9 on the "A" rated Arkansas-Louisiana Gas Company bonds and as against 3.73 on the "A" rated Panhandle Eastern bonds.

I think these bonds of Southern California Gas Company are of the same mortgage security as the company's 4% bonds maturing in 1965. I think the price of the 4's of 1965 as of 9-15-39 was approximately the same as that of the other bonds. The yield would be smaller. I cannot remember the calculation. It would be 25 or 30 points smaller in basis, or something like that. I do not have right now available the price at September 15, 1939, of the Southern California Gas Company 4's of 1965. From the Commercial and Financial Chronicle of September 16, 1939, which you have just handed me, it appears that the last sale on Friday of that week ending September 15, was 105⅜. That would compare with the price of 106¼ shown on my Exhibit 150 for the Southern California 4½'s of '61.

A 4 per cent bond selling at 105⅜ with a maturity of approximately 26 years shows a yield to maturity of approximately 3.65 per cent. That represents a difference of 42 basis points in yield. We have two bonds of the same company, with the same mortgage security, selling on the same day at considerably different yields. I think the yield on the 4 per cent bonds is probably more indicative of the credit of the company. Nobody can tell. It may well be that a person buying the 4½ per cent bonds may obtain a yield to maturity of 4.07 per cent. It may be that buying that bond above the call price may result in a considerably reduced yield. In other words, it would be a yield on short term money if the bonds were called. It is the possibility of a call that keeps the price down and the yield up. Yes, I think the 4 per cent bond of Southern California Gas Company which I did not use in my Exhibit 150 is more indicative of the company's credit, but I was not particularly interested in the company's credit here.

This exhibit here shows yields which are available to investors in different types of natural gas company bonds. It is true a company's credit position in the investment field at large is one of the determining factors of the yield at which its securities can be sold, but here we have a case of where a bond is selling slightly above its call price and it may be that investors will buy that bond and get that yield on maturity. It is of some significance.

1385 It is true that in the preparation of this Exhibit 150, referring specifically to pages 3, 4, and 5, I used only one issue of those companies which had more than one issue outstanding and I invariably took the issue with the highest yield. I did this because those pages of the exhibit were set up to show that substantial yields were available to investors in other public utility securities. These pages of the exhibit were not introduced to show what yields were in the industry at large. If you will refer to my original statement, I said that the exhibit showed that substantial yields were available to investors both in bonds and preferred stocks of other utility companies.

Yes, I made a conscious choice in selecting that issue of companies having more than one issue outstanding, which had the higher yield. The note at the bottom of each page shows that only one issue of each is included. I do not think I pointed out in my direct testimony that I picked the issue having the higher yield as between two issues of the same company. I did not specifically men-

tion that. On each of those pages there is a note which says "Only one issue of any company is included." The exhibit would not have been substantially different if I had included a number of other issues of each company's bonds like 4½'s and 4¾'s or 5's. It would have made a much longer exhibit and would not have been greatly different in results.

I know a great many of these companies have other issues. I have not made the mechanical computation to determine whether there would be any consequential difference if I had used either all issues of all the companies shown, or issues with the lowest yields.

The yield of 4.07 on the Southern California 4½'s due in '61, is the true yield to the investor if the bond is held to maturity. "Yield" is a well-known term and true yield goes to the maturity of the bond.

This bond is yielding more than the Southern California 4's of '65, which are yielding 3.65, because it is selling a little above its call price. The reason it is selling for only a little above the call price is because that is all the investors are willing to pay for it. They are influenced by the call price. They know what the call price is. That is the factor that I testified before keeps the price down to 106¼ and its yield up to 4.07. The yield at 4.07 includes a factor which takes into consideration that call price. I am not sure that it is fair to say that the yield includes a "premium" on the gamble, or the possibility, that these bonds will be called at their present call price. Certainly the yield of 4.07 is influenced by the fact that the bonds are selling above their call price. If these bonds had no call feature presently they might be selling at almost the identical yield of the 4's of '65. They might vary a little bit because of the difference in maturity.

One way of saying it would be that the difference in yield of some 42 basic points is due to the influence of the call price, and that this difference may be said to represent the investor's premium against the possibility of call. I suppose that is a fair way of stating it, but I do not think it is the way I would describe it.

In the case of the 4's of '65, there is also a call price, but I think those bonds are selling below their call price. They are rated "Aaa", too.

1386 (November 2, 1939.)

In the course of our discussion yesterday I stated

that it was my purpose by the information presented on pages 3, 4, and 5 of Exhibit 150 to show the opportunities for investment open to investors. I question whether you can get a better over-all picture by a weighted average than by a simple average. There are all kinds of refinements that might be entered into. Some of these issues have more bonds outstanding than others; but it is uncertain whether a refinement to that extent is of any more value, in my opinion. It is uncertain for the reason that if a company has $50,000,000 of securities outstanding which would yield an investor 7 per cent, and another company has only $5,000,000 of securities outstanding that would yield 6 per cent, the weighted average of that might work out at something around 6.75 per cent, or something like that. I am not sure for the purpose for which this exhibit was prepared that that is any different than showing simply the yields at which the securities of a particular company are selling. As I stated, the purpose was to show investment opportunities to the public at large. The opportunities for investment at given yields or given returns depend upon the amount of that security outstanding and available for investment, but there are sufficient amounts of these securities outstanding.

No, I do not think it would be a better and truer picture in determining over-all averages for the issues shown on pages 3, 4, and 5 of my exhibit to use weighted averages rather than simple averages, which I show at page 4 and which I stated into the record in connection with page 5. This was not built up to show over-all averages. It was built up to show investment opportunities, and I state again that I do not thing I get a better picture of investment opportunities by showing a weighted average instead of a simple average.

The reason I didn't show the investment opportunities available to an investor on the New York Stock Exchange instead of limiting it to the Curb, is that the latter has a wider representation of utility securities than the former. That is, it is wider in types and number of companies. I think this is true when you take into consideration all of the securities on the Curb Exchange and admitted to unlisted trading purposes. I have never made the calculation as to the amount outstanding. I don't know whether the Curb Exchange is wider in the amount outstanding. I have looked at the list on the Stock Exchange from time to

time. I have a general knowledge of the listings of domestic electric and gas utility bonds on the New York Stock Exchange at September 15, 1939. I read the New York Times of that date, and I usually glance at the Stock Exchange tabulations of stocks and bonds.

In preparing my exhibit I did not make any effort to get the bonds of electric and gas companies that were traded on the New York Stock Exchange on September 15, 1939, to give me a list comparable to the list contained on pages 3, and 4 of my Exhibit 150. I made up my mind first that the Curb list was a wider list and more indicative for the purpose, and I used the Curb listings. I made no specific effort to find out how much wider or how much more representative the Curb list was. I relied on my general knowledge for that.

Questions by the Examiner.

In answer to your question as to what are the requirements on the Curb that produce that different kind of a range, the New York Stock Exchange requirements are more difficult from the standpoint of information re-
1387 quired to be furnished. It is more expensive for companies to list securities there than it is with the Curb Exchange. A great many smaller utility companies do not even list their securities on the Stock Exchange. The Curb listing is all-inclusive, bonds, preferreds, and commons. I think the representation on the Curb has always been broader in coverage than the Stock Exchange because of the things that I have mentioned, the rather rigid requirements, the amount of information to be furnished to the New York Stock Exchange, and the expense involved.

Cross-Examination by Mr. Slaff Resumed.

It is rather difficult to say that there is a generally better grade of security on the New York Stock Exchange than on the Curb. I just look at page 3 here, and I find one of the very highest grade securities, like the Consolidated Gas of Baltimore. I hesitate to say that the overall grade of the New York Stock Exchange securities is higher. I think I might say it this way, that the securities listed on the Stock Exchange are of a more seasoned char-

acter. That is generally the appellation that is given to distinguish the Stock Exchange from the Curb list. I don't know whether the over-all yields on the Stock Exchange list would show a lower yield than the yields on the Curb list shown on pages 3 and 4 of Exhibit 150.

As I count them there are 60 bonds listed on pages 3 and 4. I do not know the exact number of domestic electric and gas companies which have bonds listed on the New York Stock Exchange. I will accept your statement that there are some 65 such companies having approximately 90 issues listed on the New York Stock Exchange. I do not know how many companies had issues traded in on September 15, 1939, on the Stock Exchange. I have not made a calculation to determine that there were approximately 44 or 45 electric and gas companies which had some 60 issues traded in on the Stock Exchange on September 15, 1939. I have a general knowledge of the securities that are listed on the Stock Exchange.

I have not made a calculation to determine the weighted average yield on the bonds of domestic electric and gas companies sold on the Stock Exchange on the date last mentioned as compared with the average yield on the issues sold on the Curb on that date. You have stated that such yield on the Stock Exchange issues sold that day came to 3.63 per cent, as compared with the average yield of 5.12 for the Curb list. I do not think that this Stock Exchange list would more adequately show the investment opportunities open to the investor at large. I say this taking into consideration the purpose for which this exhibit was prepared. This exhibit was prepared to show investment opportunities to investors and to help in forming a judgment as to what might be a proper rate of return for the Natural Gas Pipeline Company of America. Putting in the yields of bonds of such companies as the Commonwealth Edison Company and other very highest grade bonds is no indication whatever of, nor would it be of substantial help in determining, a rate of return for a company of this type. This list was not put in to show all opportunities available to investors. There are countless opportunities available to investors. It simply was put in, as described when it was put in, as a list of securities of utility companies which were traded in on the New York Curb Exchange, a rather wide list, on a particular day; and it must be remembered that

I made the point very early in my testimony that investors were interested in getting the highest yield they could get commensurate with the safety of the bonds. They
1388 weigh safety or hazard against the potential return.

Yes, pages 6 to 15 of that exhibit show a pretty wide range of companies. I think there would be a few natural gas pipeline bonds listed on the New York Stock Exchange, very few. I think of Southern California Gas Company as a pipeline company, but it is really a distribution company and so considered by investors. It has tremendous distribution facilities. That company is one of the companies shown on page 1 of my Exhibit 150 under the caption "Natural Gas Company Bonds." It has two issues listed on the New York Stock Exchange. Southern Natural Gas Company is listed on the New York Stock Exchange. It is a pipeline company which controls companies owning distribution facilities. The Panhandle Eastern is a pipeline. It is listed on the New York Stock Exchange, if my memory is correct. I am not sure of that. Columbia Gas and Electric Corporation has three issues on the New York Stock Exchange. That company is shown on page 1 of my exhibit under the heading "Natural Gas Company Bonds."

In my tabulation on page 1 of Exhibit 150, I show the Columbia Gas and Electric Corporation debenture 5's of 1961. Columbia also has outstanding debenture 5's due April 15, 1952, and debenture 5's due May 1, 1952. They are all 5 per cent securities. They are all the outstanding issues of Columbia. The price of 5's due May, 1952, was 100¼, that of 5's due April 15, 1952, 100, and the 5's due January 15, 1961, 98¼. The ones I picked for my list are the 5's due in 1961 with the price of 98¼. That represents the issue with the highest yield. It is a fact, then, that I picked for inclusion on page 1 of my Exhibit 150, of the three Columbia Gas and Electric issues, the one with the highest yield. There was a choice that the investor might have made between the one with the higher yield and the ones with the lower. He obviously would have bought the one with a higher yield. They were equal debentures. They were all traded in on that day. Some investors apparently wanted to buy a shorter maturity. An investor with a peculiar requirement might buy shorter term securities. "Special" might be a better word to use instead of "peculiar". In explanation of the fact that

three securities of the same company with equal security are selling at different yields to investors, I said that it seems to me that the only possible explanation was that the people were buying the shorter maturity and willing to take a lower yield because they wanted a shorter maturity. I think that is the real explanation. It seems to me clear that their willingness to take a lower yield is because they want a shorter maturity; and I think that could be classed as the special requirement of that particular group of investors.

There may be one or more other natural gas company bonds listed on the New York Stock Exchange. Going over my list on pages 3 and 4 of Exhibit 150 I find three natural gas company bonds listed, those of Arkansas-Louisiana Gas Company, Atlanta Gas Light Company, and Southern Counties Gas Company. Atlanta Gas has a lot of distribution. Arkansas-Louisiana and Southern Counties have substantial distribution.

I have not implied that the Curb list was any more representative so far as natural gas companies were concerned than the Stock Exchange list. I do not now say that it is. I have never said it. That was not the purpose of this exhibit.

Redirect Examination Interposed by Mr. Morgan.

Assuming that the Columbia bonds are natural gas bonds, when those three securities were offered on the Stock Exchange on September 15, there was an opportunity to buy bonds with a yield of 3.14. My ex-
1389 hibit was prepared only for the purpose of demonstrating opportunities for investment. This exhibit does not pretend to portray the credit position of any company, but is prepared to show investment opportunities available.

Cross-Examination by Mr. Slaff Resumed.

The list on pages 1 and 2 was selected by me. Page 3 is a list of all securities. I had nothing whatever to do with their selection. Page 1 shows a list of representative companies which to some extent or other are engaged in natural gas operations in varying degree and character.

Referring to the bonds on page 1, you are correct in

stating that some of the bonds of Southern Counties Gas Company were selling above the call price. They were selling about 3⅜ above the call. There are several bonds shown on pages 3 and 4 which were selling at or above the call price. The Carolina Power and Light is one of them. Another is the Erie Lighting, selling 2½ points above the call; and still another is the Jersey Central Power and Light, selling 1½ above the call. The company last named has filed a statement with reference to a refunding operation. I don't know how it is going to go. The Kentucky Utilities is selling at call; Louisiana Power and Light at 1¼ points above call; Northwestern Electric at 2¼ points above call; Philadelphia Electric Power Company at 6 points above call; Potomac Edison at 2 points above call; Southern Counties Gas Company at 3⅜ above call; Southwestern Light and Power at call; Texas Power and Light at 1¼ above call. In each of these cases the fact of the pressure of the call price is one of the factors keeping the yield of those bonds up and the price down. It always should be remembered, however, that those bonds are purchasable, and it is entirely possible that an investor will get that particular yield to maturity. He is taking a chance, though he is not taking a chance in the sense that he is taking a gamble, as you say. If they are called, he will get probably a short term money rate on the bonds.

I have a list in my office of the preferred stocks of electric and gas companies listed on the New York Stock Exchange. I have looked at it from time to time, and I have general ideas as to the number listed. I cannot say that I have never made any attempt to determine the number of these securities listed. I did not actually for the purpose of this case add them up. In my mind I did make a specific evaluation of whether the list of preferred electric and gas company stocks on the New York Stock Exchange were just as representative as the list shown on page 5 of preferred stocks on the Curb. I did not add them up. I used my judgment. I did not get out a list of the preferred stocks on the Exchange and look it over as contrasted with that list on page 5. I look at the list every month. I don't think I looked at the list in specific preparation of this Exhibit. I cannot tell you now how the Stock Exchange list of preferred stocks compares with the Curb list on page 5 of Exhibit 150 as to the number

of securities or the number of companies. I cannot tell how they compare in amount. I do not know how that list would compare in over-all yield with my list shown on page 3. I cannot tell you approximately in terms of percent. It would be a guess. Since the list of such preferred stocks on the New York Stock Exchange would include such outstanding companies as the Consolidated Edison, with very large amounts of preferred outstanding of high
1390 quality, and companies like the Public Service Corporation of New Jersey, I should judge that the yield on those preferred stocks on the New York Stock Exchange would be lower than the yields on the preferred stocks which are available to investors on the New York Curb Exchange. I would not attempt to say how much lower.

I had to pick a particular time in order to get prices and calculate the yields, and September 15 was the latest date which I found it possible to use in order to be ready to testify in early October. I made no calculation to determine that that was the day of the highest yields in the last several months. I do not know that that is true. I did have this list done early in June in a similar manner and then brought it down to the latest date because I wanted to have the latest date at the time I testified.

When there was no sale of these preferred stocks, we obtained from sources which we considered reliable the bid and asked price. There were instances in my list of preferred stocks on page 5 where no sales took place on September 15, 1939. It is obvious on the face of the document. For instance, "108—109¼" clearly means 108 bid and 109¼ asked. What I did there was to take the entire list and then get the prices on September 15 or the bid and asked prices on that date.

With respect to the bonds on the Curb, as I have stated, all I took were those actually traded in. That was a wide list and seemed to me adequate. The technique or method differed in the two instances necessarily, because I was anxious to get a representative list. My anxiety to get a representative list did not extend to getting the Stock Exchange list and showing the results of those sales. As I have said before, I had previously made up my mind that I had to have some standard, and I selected the Curb standard as being representative, and I stuck to that.

You are now talking about the Census of American listed corporations when you say that when I got into the

field of investment opportunity outside of electric and gas companies, I covered the waterfront completely. With reference to that particular thing, I had been with the S. E. C. when that study was started, and I followed it with interest, and I took the study as I found it. I thought it was of substantial interest. I did not cover there what I conceived to be substantially the entire range of American industry. I took it from the S. E. C. They covered it. I included in my exhibit everything that they had put out.

In preparing this exhibit I have tried honestly and fairly to prepare one which would be helpful in determining a proper rate of return. You can characterize it as you may. I considered it a fair and proper presentation. I consider that the lists of securities which I have prepared here were helpful to me in determining my opinion as to the rate of return proper for this company. I suppose you are correct in saying that the only advantage of anything being helpful to me as far as my testimony in this case is concerned, would be in its being helpful to the Federal Power Commission as well. Everything that I have done in preparing these exhibits I consider proper and helpful in determining a proper rate of return for defendants.

At pages 6 to 15 of my exhibit 150 I show rates of return earned on invested capital in various non-utility industries. These rates of return are computed before the income tax. I show an over-all average return, ob-
1391 tained by adding the return in each industry and dividing by the number of industries, of 9.46 per cent in 1934; 10.02 per cent in 1935; 12.59 per cent in 1936; 12.05 per cent in 1937; and for the period 1934 to 1937, taking into consideration the notes shown on page 6, 11.04 per cent. This last average was arrived at by adding all of the figures in that last column on page 6 and dividing by the number of lines. I have not made a calculation to show what the over-all figure would be for the years 1931 to 1937, inclusive. In my judgment, taking into account the fact that industrial earnings were generally at a low ebb in the early years of the depression, I believe that figure would be lower than the figure for the period 1934 to 1937. The returns for the year 1938 were lower than they were generally for the year 1937. While I have had no opportunity to check that, it is well known that earnings

in 1938 were below the earnings in 1937, generally speaking. I don't know whether I can say that they were very well below the 1937 returns because I have no idea of the magnitude. I would say that it was probably more than 10 per cent below, but to give it an actual figure I am not prepared. I would not name a specific figure.

I keep up with that sort of thing in my capacity as a financial consultant. I get Standard Statistics in my office regularly. I think I get the Public Utility Service from that institution. Yes, I think it is important, as a financial consultant, to keep advised of rates of return in American industry at large. I receive all the information which I think will be helpful in my business. I don't take all of the services.

I am sure that the falling off in the rate of return for 1938 as compared with 1937 for the companies listed on pages 6 to 15 of my exhibit amounted to at least 10 per cent. I cannot say the exact amount. I am not sure of any amount beyond 10 per cent, in that connection, because I would have to know the actual over-all return in 1938 in order to answer that. It was impossible to obtain comparable figures to this for 1938. It might have been impossible to obtain standard figures accepted generally in our profession for the return on invested capital for the year 1938 on some bases. These statistical services are of many types and include all kinds of calculations. Some particular service may have made some calculations on earnings in 1937 as compared with 1938. I do not know what Standard Statistics has done along that line. I have never investigated it to find out. I think Standard Statistics is a thoroughly reliable source of financial information. It is a well known service. I think their services are on a par with Moody's, Poor's, and the usual standard services in the field. I have said that the returns for 1938, in my judgment, were lower than the returns in 1937. Yes, the average figure for the years 1934 through 1938 would be lower than the average shown for the period 1934 through 1937. I have not actually made the calculations. I am quite sure it would be. Since the returns for 1938 were below those of 1937, it must of necessity follow on that basis that the average for 1934 through 1938 is lower than the average of 1934 through 1937. Also the average for 1931 through 1938 would be lower than the

average shown on my Exhibit 150 for the period 1934 through 1937.

No, I never heard of the Cities Service Company investing in the business of general candy and confectionery stores with fountains, nor did I ever hear of any of the other companies who are participants in this project or enterprise investing in that type of enterprise. Other investors have, of course.

1392 I have never studied or made any attempt to evaluate the comparable hazard of this company which we are considering here and the investment therein with the general over-all hazard or risk of the Cities Service system. Cities Service is one of the large stockholders of this company. It is one of the largest. It has in general interests in oil, gas, and electricity. It also owns real estate, I should say. I made no attempt to evaluate the comparative risk or hazard in this business from the point of view of Cities Service when compared with the hazard or risk of the system as a whole. I have no judgment as to these comparative risks without making a study of the Cities Service system. I am not familiar enough with that system to state my opinion as to the relative hazards of the Cities Service widespread system as compared to the Natural Gas Pipeline Company of America. I am consulted by that company with reference to technical matters of certain types. I would not say that I keep in close touch with the affairs of the Cities Service system. I try to keep informed and up to date on the affairs of the Cities Service system on technical matters. I do not pretend to be an oracle with reference to that system. I do not hold myself out as an oracle on all matters. This is a very large field. I do not hold myself out as an oracle in any matters.

Looking at the Cities Service system as a whole and considering that it has large oil interests as well as large gas and large electric interests, I cannot give you any comparative idea of the hazard or the way Cities Service Company, as informed investors, would look at its investment in this enterprise compared to this Company's system of wide investments outside of this. I think I might be able to do that if I had six months or three months to make a study, but the Cities Service system is a widespread organization covering the United States in all kinds of business. I would not attempt offhand to state

my opinion as to the relative risks. I did not attempt to do that specifically in my preparation to testify in this case. I have not studied the Cities Service system. In my preparation for this case, I was attempting to determine what would induce an investor to go into an enterprise of this sort for the rate of return. Yes, I knew that one of the investors in defendants was Cities Service Company. I knew the names of the five other investors.

I made no attempt to determine in my mind what the judgment and reaction of those investors would be toward an investment of this sort because I was primarily interested in determining on what basis investors today might be willing to go into an enterprise of this kind. I don't know whether you would call that a hypothetical investor or not. I think it is real. The present owners of this company are the actual investors in this company. There is no other way to characterize them than as actual investors.

I gave consideration to a proper rate of return which might attract investors of any kind to an enterpirse of this kind. I gave no consideration specifically to the rate of return that would attract these actual investors in this project. I know of no way to find that out, and I do not know whether it would have been of any significance to me even if I had found it out. I said in my testimony that I had been in the investment field and had been responsible for the investment of large sums of money for a great many years.

You ask me whether up to the time I left the Securities and Exchange Commission I had ever had any final responsibility for the investment of large sums of money or any sums of money other than my own personal monies.

I don't know whether I can answer that directly.

1393 At the Equitable Life Assurance Society I made recommendations which were presented to the treasurer and the finance committee of the Equitable Life Assurance Society. As to whether I had any final responsibility, I think it is best to be honest. By law in New York State, as you probably well know, the finance committees of insurance companies are the people who have the final responsibility. Before the finance committee, even as far as the Equitable is concerned, the one who had the final responsibility up to that point was the treasurer. In my employments, preceding employment with the

Equitable, I had the responsibility of working with companies in the purchase of utility properties, and to that extent my recommendations might have had an influence. I am referring now to the Carolina Power and Light Company and the Electric Bond and Share. I had no final responsibility for the investment of any sums of money by the Electric Bond and Share system in utility properties. The final responsibility rested with the board of directors. I did have final responsibility for my recommendations. I did not have any final responsibility or any responsibility for the investment of large sums of money for the Central Hudson. While with the S. E. C. I think my recommendations there were possibly of some influence as to what finally happened with reference to the investment of large sums of money. The S. E. C., of course, did not invest any money. As an officer of the S. E. C. I was not responsible for the investment of any sums of money. Since leaving the S. E. C. I have made recommendations with respect to investments, but naturally I have had no final responsibility for the investment of large sums of money.

In making the statement at page 5449 that I had been in the investment field and been responsible for the investment of large sums of money for a great many years, I think the record is perfectly clear without trying to split words in two. I was the engineer in the treasurer's office at the Equitable and responsible for going out and selecting investments of all kinds and character for them in the public utility and in the industrial field. My recommendations were brought in and presented to the treasurer, and we discussed them. Then we took them to the finance committee. In most cases the finance committee approved our recommendations and went ahead and invested during my time there several hundred millions of dollars. I certainly felt responsible for making those recommendations and I caused that company to invest its money on the strength of those recommendations.

I think that on cross-examination I testified that when I was at the Securities and Exchange Commission and determining returns and earnings of power utilities, I was interest principally in the book figures of the company, write-ups, and so on. The statute, you know, requires consideration of the "earning capacity or earning power of the utility assets and securities." In that connection,

while we had no direct concern about rate of return, it was a factor that had to be considered.

In the graph at the end of Exhibit 150 I shows the earnings price ratios of twelve operating utility common stocks. One of those twelve companies is the Brooklyn Union Gas Company. I do not have the earnings price ratio for that stock. I had it in my work papers here but I sent them back. You state you have it as 12.77 per cent for January, 1939, as taken off these work papers. That sounds about right. As stated, I do not have my working papers here. If you say that the earnings price ratio of the Southern California Gas Company stock was 8.82 for that same month and that is next to the highest of those shown on the list, I assume it is correct. If it is not correct, I will correct it in my direct examination. You state that 1394 the lowest earnings price ratio for the month of January, 1939, that appears in my working papers is on the Hartford Electric Light Company stock and is 4.68 per cent. That sound reasonable. I made no attempt to determine what the average for the eleven companies, exclusive of the Brooklyn Union, would be or how that would compare with the average for the twelve companies. The twelve companies selected for this thing are twelve of the best known utility operating companies in the country. They are those that were used in the telephone study in exactly the same kind of chart. I used the same companies.

There wasn't anything peculiar as to why the Brooklyn Union, which operates in the Borough of Brooklyn, should be selling at so high a yield above the others when you know the facts. In order to get the average earnings price ratio, I added the twelve earnings price ratios and divided by twelve. I don't know what would have resulted had I added the twelve price earnings ratios rather than the twelve earnings price ratios, divided the total by twelve, and taken the reciprocal of the average. The price earnings ratio of any particular company at any particular time is the reciprocal of the earnings price ratio. I don't know about any mathematical acrobatics. This calculation was made exactly as the Federal Communications Commission studied it. The averages are the same, and the same companies were used except that I left out the telephone companies. I did not think it advisable to determine whether the average of the earnings price ratios

would be the same as the reciprocal of the average of the price earnings ratios. I did not attempt to test the validity of my average prices by that statistical process.

Cross-Examination by Mr. Booth.

I have referred to the Federal Communications Commission study. I do not mean to imply that that was a study that had been approved by the Federal Communications Commission. It was a study prepared by a part of the Commission staff. It is available for general examination by the general public or people interested in the Federal Communications Commission merely because it shows that Commissioner Walker approved the report before planographing. I do not understand that there is anything in the report to indicate that it has been approved by the Commission or by Commissioner Walker.

On cross-examination by Mr. Slaff when I referred to recent issues of securities involving pipeline companies which I had agreed that an investor in securities of companies like defendants would probably be interested in, I think I referred to the Northern Natural Gas issue of securities because that, in my memory, is the latest refunding operation wherein securities have been sold to institutional buyers. I don't think I referred to the Colorado Interstate. Yes, Panhandle Eastern Pipe Line Company is one of the large producing and transmission pipeline companies in the country. I am not familiar with all of the details of that company's recently issued common stock. I know that rights were given recently to the then holders of Panhandle common stock to buy something like 80,000 shares of additional stock. That was a rather recent issue. I think the rights were granted to the stockholders, maturing this summer or fall. The informed investor interested in the purchase of securities of these companies if they were issued at the present time would undoubtedly be interested in the information that was filed by the Panhandle Eastern Pipe Line Company with the S. E. C. in connection with this recent issue. The same answer must go for that as went for the other questions with reference to the Public Service Company of Colorado and the Northern Natural. That would be one of the factors because of the relatively few security issues of pipeline and production companies.

1395 (At this point counsel for complaint produced a document described as a certified copy of two pages taken from the registration statement filed with the S.E.C. by Panhandle Eastern Pipe Line Company and requested that it be marked for identification. At the direction of the Examiner the document was marked Exhibit 163 for identification.)

A potential investor in the securities of Panhandle Eastern might well obtain this data from the files of the S.E.C. in evaluating the investment in that company if he were interested in getting data bearing upon the reserves in the Panhandle field. It does not follow anywhere to the same extent that a potential investor in the securities of other large natural gas producing and pipeline companies, such as defendants, would be interested in this data. Information of the kind in this document is directed primarily toward two fields. This company draws from two fields, and the report is directed toward a study of the gas supply of the company in the two fields. The document contains the opinion of Ralph E. Davis as to the approximate amount of gas reserves in the Panhandle field, and to the extent that it goes into detail about that field, anybody interested in the Panhandle field might well use this information.

Redirect Examination Interposed by Mr. Morgan.

I don't think that any investor would take any report of any one geologist as final. He would weigh it and give it consideration. From my experience with an institution, if the geologist's report said the gas supply would be available for twenty years, he would probably never buy the bond for more than a 15-year life. I think I should state in connection with each one of these geological reports or reports on reserves that is qualified through me, if it is, that in forming my opinion as to the rate of return, I made an investigation and reached the conclusion that the life of the field was at least fifteen years. That was sufficient for the purpose I had in mind, in forming an opinion. If I had been going to buy bonds of the specific maturity of any particular company, then I would have wanted to know exactly, in the best way I could obtain the knowledge, how long the field was going to last; but in testifying as to rate of return, I have stated that my rate of return applies after proper amortization, which I assume will be found by the Federal Power Commission. I just wanted to make that

clear because a number of these reports have been placed before me, and each time I have been asked whether an informed investor would look at this information; and perhaps there is the implication that in assuming that the life of the field was at least fifteen years, I did not employ due diligence in making the necessary studies I ought to have made in order to arrive at a proper rate of return. I think I did because, as I say, I assumed the life of the field was at least fifteen years, and I assumed that the Federal Power Commission or other body would find the proper amount of amortization, whatever that might be, and my rate of return applies after that amortization.

Cross-Examination Resumed by Mr. Booth.

I am sure I said somewhere in this record that I assumed the life of the field to be at least fifteen years, because I certainly made up my mind with respect to that thing before I even formed my opinion that 8 per cent was a proper rate of return. I had to do something along that line. I am confident, if my memory serves me, that sometime last
1396 week, if not in the direct testimony, I clearly indicated that I assumed at least fifteen years.

As shown at page 5495 I testified in substance that if the organization is set up under regulation on a 15 or a 16-year basis and actually works out to be only a 10 or 12-year proposition, the investor will lose; that there is therefore a risk, and the investor before he goes into the thing will demand some compensation for that risk. I then added that I had included in my 8 per cent, provision for that risk.

(Exhibit 163 was offered and received in evidence, over the objection of defendants, to whom the Examiner allowed an exception.)

1397 JOHN A. COOKE, a witness for defendants, called for further cross-examination, testified:

(November 2, 1939.)

Cross-Examination by Mr. Booth.

I have read my testimony beginning on page 5233 and continuing to about page 5252 of the record. I have no corrections to suggest. There is no substantial change.

There are one or two places where the wording was not clear, just a word here and there, but nothing material, and I do not think it detracts from or varies the evidence.

I have stated that I am a partner in the firm of Peat, Marwick, Mitchell & Co., a partnership. We have been in practice, I believe, since about 1897 and have done professional accounting work continuously since that time, particularly in this country, and of course abroad; but our headquarters are in this country. We have a number of offices scattered geographically throughout the country. Our clientele includes all kinds of firms, including industrial and public utility concerns. We do skilled and professional accounting work to the point that we will undertake any type of professional accounting service.

"Sinking fund" is a very common occurrence in industrial and financial set-ups. It is not an unusual occurrence as far as the companies which our firm has represented are concerned. You ask for the difference between a sinking fund and a depreciation and depletion fund. A sinking fund is usually to take care of a repayment at the end of a period. A depreciation fund is one set aside to take care of the wear and tear or other factors which may enter into the usefulness of a particular piece of property. Usually a sinking fund is to pay off debt obligations. That is the general description of it. A depreciation and depletion fund is designed to recover the amount of loss due to wear and tear and other factors.

As to the distinction between a sinking fund and a sinking fund reserve, a sinking fund is the actual fund or the payment of the money representing the sinking fund reserve. The fund is the asset, cash and securities. The reserve may not necessarily be set aside out of the business. The reserve is not surplus as the term "surplus" is generally used. The reserve is a segregation or an appropriation from surplus or earnings. I would not say that the sinking fund reserve is normally earmarked surplus. I would not describe a sinking fund reserve as surplus. Surplus indicates what is available for dividends. A reserve fund is a distinct statement of whatever is in that account and is not available for dividends. That is why it is set up as a reserve. It is not available for dividends because you have appropriated it for some other purpose, namely the purpose of the reserve, which is whatever may be described in the resolution, or may have been in the minds of the officers when it was set up or set aside. If it is a sinking

fund reserve designed to pay off debt obligations, it is an amount set aside, not in money but on the books, preventing the distribution from surplus of earnings to the extent of the reserve fund. When the sinking fund is used to pay off debt obligations, the reserve goes into the equity for the security holders, naturally, which is the surplus.

1398 You ask for the distinction between a sinking fund reserve and depreciation or depletion reserve. My answer is similar to that already stated. The sinking fund reserve is set up on the books as a reserve against capital or an obligation of repayment of the capital—I am speaking now of the bonds as well as the stock. It may be in one of these preferred stocks or bonds or some other obligation. It is earmarked surplus. To be a reserve, it is earned surplus. A depreciation reserve is similarly surplus earmarked, but it is carried against the particular asset as a reserve for the loss of use, partially or wholly, of the asset as distinct from what I have said is a sinking fund. The general idea of the depreciation and depletion reserve is that it represents the estimated loss of the value of the property. It is not really surplus until it has been found that there is no need for it.

Amortization as applied to property values is merely the accrual over a period of years or over any period by a definite policy of annual amounts that usually in the sinking fund arrangements are the same. Depreciation is something that may fluctuate from year to year according to the use of the equipment or other factors. To answer your question specifically, the cases in which I would recommend amortization rather than depreciation would be where there is a fixed term of life of those assets, and where the assets depend on exhaustible resources, either property or other assets. It may be reserves in this particular case where I presume you have a question of gas or oil reserves.

You ask whether I would recommend setting up an amortization reserve to amortize the plant investment of a company in place of a depreciation and depletion reserve, when by the action of depletion the property would become useless, even though it has many years of physical life left. There are two factors there. You have the one factor that is exhausted and the other factor that is not. Then before we can make a decision, you must consider further whether that which has a life which is not exhaustible can be used after the exhausted life of the other factor, to determine whether or not you must cover the whole of the lesser ex-

haustible asset in the shorter life of the asset which will be exhausted sooner. Whether you call it amortization or depletion is immaterial from my point of view as long as you set up a reserve to recover your investment by the time that one or the other of the factors have exhausted the usefulness. Such an amortization reserve could never be less than the proper depreciation and depletion reserve if it was to accomplish the same purpose. Whether you call it amortization or depletion, if it has to meet a certain purpose, it must meet that purpose at the end of the term.

The depreciation and depletion reserve is based on the estimated physical life of the property, less any salvage value that there may be at the end. The amortization reserve is not based upon the useful life of the property in that sense. You are amortizing your expenditure for the purchase or building or the acquisition of an asset. To show the difference between them, probably a word of explanation is in order. If you apply the depreciation reserve, and in that allow for a salvage value at the end if it has a salvage value, then your reserve is built up to meet that difference between original cost and salvage. Amortization or depletion presumes that there is not a salvage value in the particular asset and you are spreading all your cost over the useful life of it. I did not make a positive statement that the amortization reserve means that there can be no salvage value. I did not infer that there is no salvage value
1399 there, but I say that as the term is usually used, it has for its object recovering a certain fixed amount for one purpose or another at the end of a life or a term of years.

You have asked me to assume that a pipeline which was built in 1931 has a physical life of 35 years, but the field which it serves will be completely exhausted in 1954, and the line must then be dismantled and junked. Then you ask what would be the minimum basis of computing the reserve that I would use in certifying to the balance sheet for December 31, 1938. I do not know that I could answer that question specifically with the minimum number of years. I should say that I would be influenced by the 1954 year, which is the year which you advise me the reserves or the base on which the particular business is built, would be exhausted. I would recommend a base which would take care of the investment in the lesser of the two periods.

As to what weight I would give to an engineering study of observed depreciation of 5 per cent of the book value of

the assets having a physical life of 35 years, 8 of which have expired, but which serves a field which will be completely exhausted in 16 more years, I would give considerable weight to any engineering estimate of depreciation, because I am not in a position myself to determine the depreciation rate. Therefore, I must rely on others. I would be influenced by the engineering study of observed depreciation in certifying to the balance sheet of such company, yes, because an engineer is in a better position to know what the depreciation factor is in an industry than any accountant. I am only an accountant. If I assume that the company would possibly go out of business in a lesser period than the 5 per cent permits, then I say that I would probably question the adequacy of a 5 per cent rate. Assuming that at the end of 8 years I am advised by the company that due to exhaustion of reserves that must go out of business in 16 more years, though there is a physical life of 35 years of the property, and further assuming that I had before me this engineering study that the observed depreciation is 5 per cent, I would certainly recommend that the depreciation be such as would wipe out the investment in the remaining 16 years. I would say that if 8 of the 24 years of the company's life have already expired, it would be reasonable to set up a reserve of one-third of the investment by the end of the eighth year, that is, presuming they had started depreciation in the first year.

I would give weight to any information in an examination of the company's accounts. (Objection by Company Counsel overruled.) Naturally it would not be confined to an engineering report if I had any other factors available to me. I would take the whole scope of the information available only for one purpose, not in determining or recommending a depreciation rate or amount—I am not qualified to do that—but merely to see that there had been a recognition of the principle of providing for depreciation.

As to whether I would give recognition, in the light of what we have heretofore discussed, to the fact that one-third of the life of the project has passed, that would only be one of many factors, and even that might not be of any guidance. It may not be the important factor. For instance, a company might start up one year with $100,000 of equipment and depreciate for eight years at say 5 per cent. The reserve would be 40 per cent of what $100,000; but if in the meantime it had spent a year before $1,000,000, your reserve is absolutely out of all proportion to any basis of the

term of years. Even if it be assumed that the property would remain fixed or substantially fixed, and would be the same at the end of the 8-year period as at the beginning, we must bring other factors in. I must know, for instance, to form any opinion at all, whether it is all in one class of investment, whether some of it is an item, as for in-
1400 stance, capital in the form of land, which does not have any depreciation ordinarily on a normal company's books. You may have some intangibles in there.

Assuming that the land and the intangibles constitute a very minor part of the company's investment, if the assets are all of one class and the information is put before me that the company is taking a 5 per cent rate, I am not in position to say it is insufficient, if it appears to me that that is providing a reserve which recognizes the principles of depreciation on that basis. Then I would expect at the end of the eight years to have about one-third of the asset value reserved for, that is one-third of the net asest value after deducting the salvage value.

I recall the question with the assumption of the values and the rates which appears at page 5235 of the record. I recall generally what the answer was. The first assumption contained in the question was that defendants have a maximum life of 16 years. As to whether I assumed that the gas fields were being depleted year by year in this period, I assumed nothing more than the 16-year life. I did not assume any distinction as to year by year, but merely a 16-year period over which I was calculating this fund for return to the equity holders of their value. In a general way I assumed that part of the gas fields was going out each year, but I did not go through any process of assuming it. I merely assumed that at the beginning of 16 years it was there, and at the end of 16 years it was not there. How it went in between I have no knowledge of, nor did I even use any such information in my assumption. I did not take the trouble to make an assumption that the pipeline and other equipment was depreciating year by year during that period, because I was not concerned with the principle of depreciation in my calculation. The assumption given to me was in effect that the pipeline and other equipment would be completely worn out at the end of 16 years. I did not consider the question of the pipeline and other equipment being worth only salvage value at the end of the 16 years because the gas field was exhausted. I assumed merely an investment there that actually covered over the 16 years. The dtail of

how it was made up or the basis of annual exhaustion were never even considered or thought of in the assumption on which I based the calculation.

Inasmuch as it had nothing to do with my assumption, I did not give any consideration to what the company was recording on its books for depreciation and depletion expense or whether it was setting up an adequate reserve for the ultimate retirement of the pipeline and other equipment.

The second assumption was that the proper rate base on which these companies are entitled to earn is $75,000,000. I did not go through any process of year by year estimates or assumptions of value, but assumed that over the 16-year period from the beginning to the end the investment was $75,000,000. That was the sum which was required to be restored, the property value that was required to be returned or obtained for the benefit of the security holders. This $75,000,000 rate base was the complete property value. I did not assume that this amount was reduced annually by the amount of depreciation and depletion.

The third assumption was that the proper annual return is 8 per cent of that rate base. I could only assume; I could not say it was proper. I took "return" to mean net
1401 income before depreciation and depletion for the reason that we are dealing with the return on the property value. I understood "return" to be before the deduction of interest for bonds.

Passing to the fourth assumption to the effect that in order to distribute the burden of returning to the investors the capital or the amount of the rate base, a fund is to be set up in equal annual installments over a period of 16 years, I assumed the investors to mean the security holders, being those to whom the property value would be ultimately returned. They include the stockholders and the bondholders, all the security holders. I don't know whether there is a distinction between capital and rate base. That is getting beyond my realm. By the words "in order to distribute the burden of returning to the investors the capital or the amount of the rate base," I was thinking of the property value. Call it capital, or call it whatever you like, it is the value that you set up, and I believe capital was the term that was used in the question which led me to the question of rate base.

You ask me how depreciation reserves should be handled on the books of the company if the rate base is larger than the capital. That would be confusing two items. You are

confusing something which is not on the books with something which is on the books. The two things are not the same and, therefore, I cannot answer that. I assumed that the fund to be set up on the books would be a sinking fund, the purpose of which would be to provide the amount of money required at the end of the period to restore to the security holders the value which the Commission may say they are entitled to.

Questions by the Examiner.

Mr. Booth asks me if I think that prudent management would choose to invest such a fund in riskless securities bearing 1.35% interest or to use such a fund to retire outstanding bonds bearing 6% interest which are callable at par if it had such bonds outstanding. That is not the type of question ordinarily asked of me in my line of experience, because I am not an investment counselor and would not presume to advise on investments. I do not necessarily consult investment counselors on such questions as those counsel has been asking me when I arrange or analyze the books of a corporation. The company would be the one making the investment. If they had the money to invest, they would consult the investment counselor. The question directed to me is not the type of question on which I would get information, either from the counselor directly or through the company, any more than any man in the street may be asked his advice on whether one thing is more prudent than another. I hate to claim any ability to advise anybody where they should put their money.

Cross-Examination Resumed by Mr. Booth.

Without claiming to be an authority, or, as is commonly called, an expert on advice of this character, if a corporation can get 6 per cent, whether it is on its own bonds or on others, rather than 1.35, I think it would be well advised to make such investment. If it did that through the retiring of its own bonds, and it had to make up the difference in the sinking fund representing that 6 per cent then it would not have sufficient in the fund at the end to give it both the property value and the earnings. If the reserve or that amount carried to the reserve be used to purchase the company's own bonds, there would not be that fund there in this full amount at the end of the term. I testified before on

that, and in making my answer I am assuming that that is being considered. The statement has now been overlooked by Mr. Booth, but I did make that statement before regarding the lack of full fund at the end if it was invested in the company's own bonds at 6 per cent.

I assumed that the return referred to in the question originally asked me on direct examination was before interest. The rate of return as I understand it in a case of this kind is on the property value, such property value representing the property of the security holders, either in whole or in part, of one kind or another, so that if any lesser amount is paid to the one, the difference becomes payable to the other; and therefore, any reduction in interest paid to the bondholders is included in whatever per cent may be left
1402 for the stockholders and is not a saving. It is merely a transfer. That is why I asked you to determine what you mean by "saving." It may be a saving in interest, in the sense of the word "interest"; but it is not a saving in the amount paid to the security holders pursuant to their rights.

I believe some companies now engaged in an extractive industry pay liquidating dividends on their outstanding common stock out of the depletion reserve. I could not name any companies which have. The very term "liquidating dividends" indicates payment out of reserves rather than out of earnings.

Going to the fifth assumption in Judge Morgan's question to me, to the effect that these companies have bonds outstanding which bear 6 per cent interest, I understand that assumption to mean that the bonds were outstanding against part of the $75,000,000 rate base. I understood that the interest on those bonds was to come out of the 8 per cent return. I had no particular kind of bonds in mind in formulating my answer. I did not assume that the bonds were non-callable or callable only at high premiums. I did not assume that the bonds were callable for sinking fund purposes at par. I merely assumed that there was a value of $75,000,000 to be returned over the period; that the fund was to be built up to the $75,000,000 at the end of the 16 years. I did not go into consideration of where the company is going to get the money to redeem the outstanding bonds which are callable for sinking fund purposes. They might get it from one place or another. If they have not got it in whatever return is allowed, they would have to do some financing of one kind or another, borrow the money to

pay it, or go into default. I don't know. I have not gone into that with the idea of determining the policy.

I assumed generally that the $75,000,000 rate base was to prevail during the entire 16-year period. I made that assumption merely for the purpose of making the calculation. If the property is going to terminate or die in 16 years, under normal circumstances I think it would go down in value. It is in very rare cases that it would not. I assumed a $75,000,000 rate base to prevail during the entire 16 years merely because that assumption had been made as the basis of the calculation. I did not make the assumption. The assumption was given to me, I believe, in the question, and on that assumption I made a calculation. No, the question was not so long that before he got to the end of it I forgot the first assumption. The maximum life was assumed to be 16 years, and I figured on 16 years. However, the principle which I was intending to illustrate does not vary whether it is 16 or 14 or 10 or 20.

I did not assume that the mortgage indenture required the bonds to be paid off in specific amounts on specific dates faster than the fund accumulates. I believe in my testimony I said I was assuming that the bonds could be retired as they were needed, that is, that the company or the trustee, from the sinking fund, could make such investments as were required. I would not be in a position to answer your question as to the conditions under which the management invests its sinking fund in securities other than by retiring the debt of the company. If you have a sinking fund trustee, the trustee has the right to determine what investments you shall make. I can't answer your question as to what companies in my experience have invested their sinking
1403 fund in securities instead of paying off their debts. I do not recall any mortgage or other instrument under which debt obligations are now outstanding which provide for a sinking fund which is not to be used to retire outstanding debts. There might be such indentures, but I do not recall any. Many companies have indentures for the retirement of their bonded or other indebtedness, maybe for preferred stock. That indenture provides for setting aside sums of money determined by various means. In many of those, and I will say a large number of them, the purpose is not to build the fund to the end of the whole term, as in this case, $75,000,000 at the end of 16 years, but is to permit them as they go along to use that money to redeem their indebtedness, in which case the trustee may at

his option use the money to retire that indebtedness, or he could hold the money until such time as the whole obligation matures. That is a sinking fund created for the purpose of paying the debt. That is the usual and ordinary industrial situation. That is the way most businesses hope to pay off their investors. They can pay off the prior obligations and at the earliest possible date get down to the equity left for the common stockholders.

You ask me under what conditions I would expect the management to invest its sinking fund in government bonds with a yield of 1.35 per cent instead of retiring its outstanding bonds, which pay 6 per cent interest and are callable at bar. (Objection by Company Counsel overruled.) I can make an answer, of course, but I don't know whether I am a competent person to make it in an important hearing of this kind. I have not been a trustee under any sinking fund. I have testified on the use made of sinking funds as I have found them or as the accounting profession finds them in the industrial field or in the field of business. I will answer that question in this way: If the company may have a need for cash, the liquidity of government bonds would be a factor that it should recognize, whereas investing the fund in its own bonds would not give it that liquidity which it might need in a moment of emergency. That would apply for whatever purpose it might need its funds and for which it would be permissible to use it. Generally speaking, the sinking fund is used only for the retirement of the debt or investment in the property. I am speaking, of course, of the sinking fund for the retirement of indebtedness of utility companies which comes into question and which we were discussing.

With reference to the $10,000,000 that, it was assumed, will be required for the purpose of additional property, as opposed to replacing property, for use in the operations of the company, I did not assume that that amount was in the rate base because that would bring in a factor wherein I would have to decide a changing rate of accrual. For instance, this is based on 16 years, and I assumed 16 years. I also assumed 8 per cent return and the value of $75,000,000. If I am going to bring $10,000,000 more into the property value, then if it does not come in at the beginning, which would make it $85,000,000 to start with, it would have to come in at some time during the period, and it would stagger the

amount that would have to be put in each year as the additions are made. That would increase the amount put into the sinking fund each year and would make a complicated calculation, which I did not think was necessary to introduce for the purpose of the illustration.

I ignored the factor of depreciation because we were not considering depreciation. We were considering the recovery of the total value, regardless of how it was amortized, depreciated, or depleted. I eliminated that $10,000,000 from the question entirely. The $75,000,000
1404 I considered was the property value on which the assumed rate and the assumed rental was based, and I believe I merely used the whole figure as an illustration. The introduction of $10,000,000 additional would not change my illustration materially. It might do it figuratively, but it would not change the principle that I was endeavoring to establish. No, I did not assume that the 8 per cent would return to the investor his capital. I understood and assumed the 8 per cent was a return to which he was entitled on the property value over the period. In fact, I believe that it was distinctly stated there in the evidence that it was assumed that the security holders were entitled to the $75,000,000 plus 8 per cent return on that value for 16 years; and I believe that the figure that would be mentioned would be $96,000,000 as earnings return over the period in addition to the $75,000,000 property value return. I don't think I even recognized the assumption that $10,000,000 would come from the fund Mr. Morgan asked me to assume would be established in my calculation. In continuing corporations the fund might be used for supplying the $10,000,000, but not where a company would have a limited life.

Referring to the seventh assumption that "1.35 per cent is the rate of interest which will be received by an investor in government bonds, which are the most nearly risk-free of any securities available for the investment of a trust fund," you ask me which is more risk-free in returning the money to the security holder or investing it in Government bonds, I think the government bonds are considered to be the most risk-free of all. Let me answer the question this way: If you could return all the money at one time to the investor, then obviously, as far as that investor is concerned, there is no risk any longer. He has got his money back. As to why you have to hold the funds if you have it instead of returning it to the secu-

rity holders, there are a number of factors involved there. The primary consideration of a return of the money would seem to be that you have got it and therefore there is no further problem about it; but the trustee can hold that money in government securities which have the least fluctuation, and when eventually he has to redeem, he can liquidate them for the purpose of paying the obligation. That is what one has in mind when you speak of investing, although I am not an investment expert, as I told you. If the trustee holds the fund in government securities, at least we will presume that the government securities are good or are going to be good. If everything else fails, that will be the last. If you pay it back to the bondholder, then he is faced with the problem of investing it himself.

Yes, the company's responsibility is concluded when it returns the whole amount to the security holder. If any portion of the whole be returned to the security holder, the company's responsibility is then at an end with respect to that portion, if you can segregate the rights and obligations under a portion. So far as it has turned the money over to the trustee under the terms of the mortgage indenture, the company's responsibility is concluded. Then the trustee, as an individual, is the one who determines or decides what bonds are retired in carrying out those terms of the indenture. What I am trying to bring out is this: Bonds are very, very seldom, if at all, retired 5 per cent for each bondholder. They call certain bonds, and therefore those particular bondholders get their money out. There can be no question as to them when the particular bond is called and paid off. The remaining bondholders, however, do not. They are still outstanding. Then if you work on that basis, assume that at the end, through some catastrophe which might appear during the last two years say, your property or your operating facilities are destroyed and you have no means of restoring earnings or revenue, the remaining bondholders are likely to lose their equity.

Therefore, over all, the situation of this last batch 1405 not getting theirs or any part of theirs because they were the last bonds to be called, gives them a total loss, where as if you had it invested outside by the trustee in government securities or, if there were any, in safer investments than that, then it would be there and would be liquidatable, and they could sell those and with

the money they would pay proportionately all the bondholders the percentage which the funds they have bear to the total. Those bondholders, who, by retiring the company's own bonds, might have lost everything, lose only 5 per cent. If you can eliminate the individual bond element, I mean if you have a million dollars worth of bonds in $1,000 bonds and you retire a thousand bonds, all of the particular companies, if you have six, may have had part of their bonds called and paid off. If you have six bondholders and they are paid back year by year in proportion to the amount which they hold, then my answer would not apply. If all the bondholders have been paid off, the only circumstance which could interfere with the payment of liquidating dividends would be the question of availability of cash to do it with. I am not entering into the question whether it is good judgment to do it or anything about that at all, because I am not in a position to so express an opinion. I do not know what I would do. I would wait until I got there and then I would decide.

You ask under what conditions would I say it is proper for a company to accumulate a fund of $75,000,000 over a period of 16 years to pay off the security holders at the end of that period. (Objection by Company Counsel overruled.) I cannot answer the question. I am not in a position to know. I have not given that any consideration. I was not concerned in my calculation whether it would be paid off piecemeal or at the end in one lump sum. The calculation which was made was on the basis of having the sum at the end of 16 years in total, and gives the lowest amount to be put in annually in the way of a sinking fund to build up that figure. If you pay it off every year in the proportionate amount, you are going to have to set aside a larger amount every year. Then you would be disturbing your compound interest factor. If you are going to pay it off, or can pay it off, piecemeal, the question of government bonds does not even come into the picture because you can retire your bonds. So my calculation on the amount at the end of the period, regardless of whether there be any merit at all to it, was in favor of the lower amount of sinking fund sum per year to be recovered at the presumed rate that you wish.

You have asked whether, as far as I am concerned, I am able to state any circumstances under which it would

be proper to set up a fund which would accumulate $75,000,000 at the end of 16 years. I can only say as regards that that the only circumstance that could require the accumulation of the fund at the end of that period would be some provision inherent in the agreement or in a decision which the company would be ordered to abide by. There is no general condition which says any fund shall be handled one way or the other. So far as my general accounting theory may be applied, it presumes, in the absence of a method to take care of redeeming the investment earlier, that it will be provided by the end of the period. My previous answer is also an answer to be considered in connection with the one I have just stated. I believe each was a statement of a different situation or an attempt to give a clear answer to the question.

You ask what would be the comparative effect on the stockholder if on the one hand the company invested the sinking fund in government securities at 1.35 per cent, and on the other hand retired from time to time 1406 bonds which carried 6 per cent interest. The difference would be that the sinking fund built on the basis of investment in 1.35 government securities would mean the accrual in the sinking fund of the interest which would be derived from those investments. In that particular case it is also presumed that the bonds remain outstanding, in which case the company goes on paying 6 per cent to the bondholders in accordance with the terms of the bonds.

In answering the second section of that question, if the money is used to retire the bonds, there is no money coming in in the form of interest from outside securities to help build up that sinking fund, and the fund would receive 6 per cent bonds of the company. In that particular case the company would go on paying the bondholders their 6 per cent, and the payments so made would be divided. A portion of it would go under that arrangement into the sinking fund. It would go to the trustee, and the trustee would then pay out the interest on the bonds which had not been retired or brought into the fund, and the interest on the bonds which were in the fund, as they have not been cancelled, would accrue in the fund.

The fund would get the 6 per cent interest unde the obligation of the indenture. That 6 per cent would come

out of the earnings return, that is, out of the 8 per cent return which we have assumed.

In my testimony shown at page 5241, I stated in substance that taking the assumptions to which we have already referred, provision can be made on an equal installment basis for the amount to be returned, through the accumulation of a sinking fund. I did not mean that provision must be made in that manner. The statement is clear in itself. It can be accumulated through a sinking fund. You ask if there is any other way of doing it. Yes. When I said it can be accumulated through a sinking fund, I meant something that is outside the company's control, so that when the money goes in there the company cannot get it back. The other method is by holding it themselves and making themselves trustee. It can be done that way, but I doubt whether you will find any cases where the bondholders will permit the company to so hold it. That is why I said that it would give the same result. I meant the money is either with the trustee to accumulate, or the other method I had in mind of the company's accumulating it itself.

Under certain circumstances it might be paid off partially and piecemeal by retiring bonds. I hate to add "and stock" as you suggest. After all, it is not the proper thing to do for a company to pay off its stockholders in any form or other until prior obligations have been taken care of. As to whether it could be done after the bondholders are taken care of is an open question, for the simple reason that when you get down to the stockholders, they are the owners of the business. When they come to the time they are paid off, there is no business. There is nobody to operate it, and therefore they will just carry on with the investment until the purpose of their business is terminated for one reason or another. On the basis of the business ending in 16 years, you would take care of the whole thing over that period. I have not gone into the mechanics of how that can be done, but naturally your prior obligations come first.

I do not think the question of what the amount of the bonds is has any bearing on where the interest has
1407 to come from. You ask me under what conditions must the interest come from outside the company if the company has at the beginning of the period approximately $60,000,000 in bonds bearing 6 per cent interest, callable at par for sinking fund purposes. As-

suming that you mean the interest on the sinking fund, the answer is this: it must come from outside if the company is not to have its return, based on some agreed rate or determined rate, impaired either during one year or any time during the 16 years, or the whole period, I should say. You ask me to assume that the $60,000,000 in bonds were in fact paid off, and then ask whether the bondholders would, under my notion, be entitled to the full 8 per cent on the $75,000,000 which I assumed was the so-called rate base which prevailed throughout the period. The only answer I can give you on that is that I cannot answer what they are entitled to. That was an assumption in my calculation. The very reason for assuming it was that I had no means of knowing what figures or amounts would be ultimately determined.

Going back to the question which Judge Morgan addressed to me and which contained those eight assumptions, if the assumptions were different, to the extent of the difference in the assumptions obviously my answers would be different. If, instead of $75,000,000 over a 16-year period, that assumption were changed to a decreasing amount, then the assumption would be different and the figures that we gave or the conclusions would be different. The principle however, which I set forth would not necessarily change. The mere changing of the value from $75,000,000 to $60,000,000, or up to $100,000,000, would not change the principle I was trying to illustrate. You see, if I may further explain, I was not considering the depreciation factor in my calculation. I was working on the assumption given to me that $75,000,000 was the value that might be established one way or another. It had not been established. That is something that was open to discussion and was to be established by the Commission at a later date. I was not intending to infer from the mere fact that it was $75,000,000 that the principles would be different than if the figure were $60,000,000.

You ask me if I assumed that the return was to go to the security holders and no part of it could be diverted to the sinking fund. Up to the point of your saying "diverted to the sinking fund" I was with you, but that rather confused it, and I am just wondering what bearing that has on the picture. The assumption was that $75,000,000 was to be returned plus the 8 per cent over the 16 years on the $75,000,000, which was $96,000,000. If any part of the earnings went to the sinking fund—by earnings I mean this

$96,000,000—there would be a depletion of that assumed 8 per cent return to the security holders.

You asked me if the sinking fund could earn the return of 8 per cent if it were proper to divert part of this return to the sinking fund by having the sinking fund acquire the securities or bonds of the company. I don't see how even by implication 8 per cent could be paid to the fund if the bonds are 6 per cent. I previously stated that if the bonds go into the fund, then as long as they are outstanding this interest must be paid on them where they are. The bonds earn 6 per cent. The fund does not earn 6 per cent, as there may be other monies in the fund not earning 6 per cent. If the bonds make up the entire fund, then your statement would be correct that the funds, which are the bonds, earn 6 per cent. You ask me if the fund would probably earn more than 6 per cent and probably 8 per cent if the fund acquires a pro rata share of both bonds and
1408 stock. I cannot answer that. It would be rather unusual to find any sinking fund acquiring stock of the corporation which still has bonds outstanding for which the fund is created. I did not stop to tell Judge Morgan that those were not real practical assumptions which confronted me every day in the business world. I accepted the assumptions and worked out the answer. Certainly I was not vouching for the accuracy of any of those assumptions. As to whether or not those assumptions were such as I met in my business experience, that never entered into my consideration.

Going back to your question, I could not answer that without being given the amount of the bonds held and the amount of the stock and the earnings that were available to pay on them. This is what is confusing me in answering: If you have bonds in there and stock which are a part of the securities of the security holders, and in the year you pay 6 per cent on the bonds, then there is only 2 per cent or a fraction thereof, depending upon the excess of earnings over the interest requirements of the bonds, which is available for the stockholders' dividends. It might be less than 6 per cent or it might be more. If it were more, then the average going into the fund would be higher. If it were less, the average would be less than 6 per cent. Naturally, if the sinking fund had a certain amount of dollars available to go into the sinking fund each year, and if those dollars were translated into securities of the company, to-wit bonds and stock in proportion, that fund would then

earn 8 per cent, assuming that the company is earning an over-all return of 8 per cent.

(At this point counsel for the Commission produced three documents consisting of excerpts from the testimony of defendant's witness Emery given in a prior case, one described as beginning with a page numbered 2377 and extending to page 2406, another described as a 4-page document beginning with a page numbered 2444, and another a 3-page document beginning with page 3033, and asked that these documents be marked for identification. The three documents above referred to were, at the direction of the Examiner, marked as Exhibits 164, 165, and 166 for identification. The Examiner ruled that Exhibits 164, 165, and 166 were not admissible in evidence and awarded counsel for each of the commissions an exception.)

1409 J. A. EMERY, a witness for defendants, recalled for cross-examination, testified:

(November 3, 1939.)

I would like to offer a correction to my testimony of last week in the cross-examination. I was asked if I had made any calculation of rate of return for this case following the methods that I used in the 1934 testimony. I replied that I had done so by one method or following generally one method. Since that hearing I have come across an attempt to make a calculation by one other method, but it was preliminary and incomplete.

Also I would like to state that in my direct testimony the Examiner questioned me regarding the cost of a conventional pipeline and I was not able to reply. I have since had made under my direction an estimate of the important items of variation between the present line and such a conventional line, and have prepared an addendum or supplement to Exhibit 149 setting that forth, together with my estimate of the increase in earnings due to the unusual load factor or capacity factor at which this company operates.

Also there is at least one correction that I would like to make in my going concern testimony; but I understand that should be made at the time that testimony is taken up. I would like to say that I have not read the cross-examination testimony and may have some corrections that I would like to ask to be made.

Cross-Examination by Mr. Slaff.

I testified in the Chicago District Pipeline case in 1934. I don't remember the date. During the same year I had testified in the Public Service of New Jersey case. I don't remember the date. My testimony in the two cases was not far apart in point. My testimony in the Chicago case involved only the fair rate of return to defendants. I do not remember stating in the Chicago District Pipeline case on July 31, 1934, that I had recently made a study and given testimony as to an estimate on overhead costs involved in a reproduction of the Public Service Electric and Gas Corporation in New Jersey and also as to the going concern value of the electric department of that company, but I probably made such a statement. I had not made a study and given any testimony with respect to any part of the gas system of the company last mentioned. My testimony in the Public Service case had been confined entirely to the electric department or division. So far as I know there were no electric problems involved in the Chicago District Pipeline case.

I would not say that the problem of defendants with respect to lack of efficient management involved any more hazard on account of the difference in degree than the same problem with respect to the 11 companies set out in my Exhibit 148. Another hazard involved in this type of company is lack of sufficient reserves. (Objection by Company Counsel overruled.) I think that there is more danger
1410 of exhaustion of defendants' gas supply than in the case of any of the other companies in my list with the possible exception of the Union of Canada and the National Fuel Company. In the case of those companies, they are large distribution systems and they have coke oven gas available to augment their supply. With respect to the lack of sufficient reserves of natural gas, it is my opinion that defendants face a greater hazard than any of the companies set out in the exhibit last named except the two companies I have just mentioned.

I have not made a study of the reserves of Interstate Natural Gas recently, but I know generally what they are. I made such a study 8 or 10 years ago. I did not go all the way through it. I was in charge of the study for a while, but did not bring it to a conclusion. That company's reserves are in the Monroe field in Louisiana. I think the Odessa or Shreveport field could also be considered a part

of this reserve. The Monroe field is not as large as the Texas Panhandle field. I cannot state the comparative extent of the reserves. The Interstate Gas Company's acreage in the Monroe field is 54,000 acres. I do not know their reserves in cubic feet. My own knowledge in that particular case and the general opinion about this company is that it has plenty of gas reserves available, either in the Monroe field or the Odessa field. I don't know the requirements of that company compared to the amount of gas available to it. I know only that it is generally considered to be sufficient to last more than 16 years. I can find the drafts on the Monroe field for pipeline purposes but I have not the information about the drafts on the Odessa field.

The El Paso Natural Gas Company owns comparatively small reserves. It purchases most of its gas. I think that a company which purchases most of its gas is in a better position from the point of view of reserves than a company which owns and controls its own reserves, when there is no more apparent menace to the field than in the case of the fields in Lee County, which is the southeast corner of New Mexico from which the El Paso Company draws its gas. There are estimated reserves in these fields to supply this company at the present rate for 40 years; and there is no apparent danger of any one else coming in. I would say in the case of the El Paso Natural Gas Company that it is in a better position from the point of view of sufficiency of reserves than defendants which own their reserves. I know something about the contract which the El Paso Company has for the purchase of gas. I am not intimately familiar with it. I would not say that I am at all familiar with it. I have never examined these contracts. I think they are for comparatively short terms and that they are renewable on a basis which makes them an acceptable investment hazard. I do not know the basis of their renewal.

The Memphis Natural Gas Company has no reserves. It purchases all its gas in the Monroe field. Its present contract runs to 1944 and it has an option for renewal for 10 years at that time. I don't know anything about the terms of the option. The annual sales of that company are approximately 16,000,000 thousand cubic feet. I think they purchase gas from companies that have the run, so to speak, of the Monroe field, and have the same expectancy that there is in the field. I don't know this definitely.

1411 I have said that I could derive the drafts on the Monroe field for pipeline purposes. I don't believe I have the figures in my working papers here. I don't know what the draft is on the Monroe field for carbon black purposes. The Memphis Natural Gas Company gets its gas only under these purchase contracts in the Monroe field. I think the Odessa field can also be considered available to this company, because I understand that gas from the Odessa field has been offered at Monroe.

Considering the probability of the Odessa field being available, I think the Memphis Natural Gas Company is in a better position from the standpoint of reserves than are defendants. To the best of my information I think it is in a better position than these companies without considering the probability of the Odessa field being available. Yes, I have considered the availability of the Hugoton field to defendants.

The Southern Natural Gas Company also purchases gas in the Monroe field. I have no detailed information regarding its contracts. That is the only field in which it has contracts for the purchase of gas. As of this year its sales will be approximately 35,000,000 thousand cubic feet. I don't know the reserves available to them under their purchase contracts except as a general understanding, which is that they are good for more than 16 years. That is the general understanding of myself and those in our office which are more familiar with such things than I am.

The Lone Star Gas Corporation gets its gas from 39 different fields. The corporation is not an operating company. I am speaking of the whole system. Their annual sales are 44 million thousand cubic feet approximately. I think that company produces most of its gas. I don't know that it produces in 39 different fields. I cannot say how their reserves compare with their requirements. I have no information as to the volume of their reserves. There is this observation that may be made about this company, though, and that is that when and if the gas reserves are exhausted, this system consists of such a network that it can be largely used for manufactured gas. In my judgment it would be economic for it to go to manufactured gas when there is no natural gas available. It could be done economically throughout the system generally.

The Mountain Fuel Company gets its supply from three fields in southwestern Wyoming. It produces itself. Its estimated reserves are good for 29 years at the present

rate of draft. I don't know where the information as to the reserves came from originally. I obtained it from a report by Mr. E. D. Warren. I don't know who Mr. Warren is. It was a report made to the Natural Gas Pipeline Company of America some time in 1939. I don't know in what connection that report was made. There is nothing in the report which indicates the purpose unless it was connected with a view of a plan of looping a portion of the line. I don't know whether Mr. Warren is an employee of defendants or not. I don't know in what part of 1939 that report was made. I understand Mr. Warren is an engineer and I should judge so from the report. To the best of my information Mountain Fuel Company is in a better position with respect to sufficiency of reserves than defendants. That conclusion is based on such information as I have. Mr. Warren has not been identified to me. I think there are no other pipelines taking gas from those three fields.

1412 The Kansas Pipeline Company and the Oklahoma Natural Gas Company are both transmission and distribution properties companies. I think the Oklahoma Natural Gas Company purchases most of its gas. It purchases 93 per cent of the gas it uses and produces the other 7 per cent. It produces in the Tulsa, Quintum and Chickasaw fields. I am not familiar with the terms of its purchase contracts.

I have assumed that defendants will have their supply of reserves exhausted and be out of business 16 years from January 1, 1939. That is fundamental to my entire testimony. You ask me if the possibility of an inefficient operating organization as contrasted to management is also a hazard. If you mean the possibility of the present management being bad and the investor not knowing it, I would think it is not of enough importance to the investor to warrant his looking into it. If you mean the possibility of the management going bad in the future, that is something that faces every business. If an investor is contemplating an investment in a natural gas company and up to that time, so far as he is aware, there is nothing wrong with the management, I think it wise and prudent on the part of the investor to make some attempt to find out whether the management of the company is good, bad or indifferent, efficient or inefficient. You ask me if there then is not a possibility of hazard with respect to the investment that faces an investor, as to the possible inefficiency of the management. I cannot answer that question any more

completely or specifically than I have answered it. If he finds out that the management is not good, he won't invest in it. I suppose it is possible that he might make an investment and then find out that the management is inefficient. Under such circumstances, if management counted with him, he certainly would sell out. That is a possible hazard that exists in every line of business. There might be degrees of that hazard among different companies.

It is not my opinion that there is a greater hazard in that particular respect concerning defendants than there is in the 11 companies mentioned in Exhibit 148. I think it would be very difficult to find a better management than that of defendants. I think the operating organization is a direct function of the management. It is established and trained and the management permeates all through it. When I was discussing management a few questions back, I had in mind the management. One of the tests of a good management is whether the organization is good or not. In fact, that is the chief test. I can disassociate in my mind the management from the rest of the organization when the management is new. When a management and an organization have been working together for some time, I cannot. The matter of using up to date machinery and methods of production to avail one's self of the possible advances in the art which are economically available, are functions of management. I cannot answer your question whether the failure to use up to date machinery, up to date methods of production, and so on, by a company is a possible hazard to an investor in that company. I do not think Texoma is inferior to each company set out in Exhibit 148 so far as the use of up to date machinery and methods of production is concerned. I cannot say that they are better in that respect, but I think that they would equal each of the other companies insofar as those points are concerned. I would not say that both of defendants are inferior to any of the companies shown in my Exhibit 148.

1413 I don't think the possibility of drilling a large number of dry holes is looked on as a hazard by an investor. I do not look at it as such a hazard. I have made no attempt to find out the number of dry holes Texoma has drilled since it went into the business of producing natural gas, and how that number has compared with dry holes drilled by any of the other production companies shown in Exhibit 148. I do not think that the high cost per well

of drilling is classed as a hazard. When costs of production are not known there would be some hazard regarding it, but in a settled field those conditions would be pretty well known. I do not consider the Texas Panhandle field a settled field as of 1931. Where there is any doubt about the cost of production, it would be a hazard. I do not know how Texoma's production costs compare with the production costs of the other companies shown in Exhibit 148. I do not know how the average cost of Texoma's wells compares with the average cost of the wells of the other companies in Exhibit 148 which produce their own gas, except that the production costs in that field are lower than in other fields generally.

I don't know what the average open flow of Texoma's wells is and how that compares with the average open flow of the wells of the other companies shown in Exhibit 148.

As to whether a decline in rock pressures would be a hazard facing an investor in a production company, practically all rock pressures decline. In my opinion the degree of decline is not a factor of risk. In other words, I do not think an investor, making an investment in one company whose rock pressures decline twice as rapidly per unit of production as do those of a second company, faces an additional hazard in that connection. I did not attempt to determine the decline in rock pressures per unit of production for the Texoma wells as compared with the rock pressure decline per unit of production for the wells from which the 11 companies shown in Exhibit 148 derive their gas.

You ask me if any of the companies shown in Exhibit 148 have as large a single market as the city of Chicago. I think none of them reaches so large a population and volume of industry. The market depends upon competitive fuels and that is true even as to the domestic market because domestic gas can be manufactured. At the present time domestic gas for Chicago cannot be manufactured more cheaply than natural gas can be brought to Chicago. The purpose of bringing natural gas to Chicago was to supply it more cheaply than gas could be manufactured there. I do not consider the Chicago market as a great advantage to defendants. If it depends upon the market for gas as defined by other fuels, it might be a menace because of competition.

I stated I excluded any advantage of the Chicago market in making up my mind as to the going concern value of de-

fendants. I considered it, but excluded it in reaching my opinion. Regardless of what appears on page 4792 of the record, I think I stated specifically in another place that I would not take any account of that factor. If defendants were serving territory out in Arizona instead of Chicago and all other factors considered in my Exhibit 130 were the same, I would say that they would have a going concern value of 8½ million dollars if they were on their feet and earning as much as now. I might modify the latter part of that answer by saying, earning to the extent of supporting them. The earnings go into the ultimate determination
1414 of the amount of going concern value only to the extent that earnings are supporting the investment. To that extent my answer to your question is in the affirmative. The fact that they serve Chicago is responsible for the earnings which support them. It is a fact that I considered it advantageous to defendants that they are serving a market like the Chicago market insofar as the market supported the investment. If the market for natural gas were greater than defendants can supply and they are now up to their limit, any greater market would invite competition. To the extent that the market produces earnings more than enough to support the investment, that is just as likely to be a menace as an advantage because it will invite competition.

I have never attempted to determine at what price Peoples Gas Light and Coke Company would have to buy natural gas in order to buy it from anyone other than Chicago District Pipeline Company. (Objection by Company Counsel overruled.) I don't think there is any immediate menace of competition facing defendants. There is a potential menace. I would not say that the market of defendants is inferior to the market of any of the companies shown in Exhibit 148 except insofar as it is at the end of a long line. I think the competition from other fuels is somewhat more severe in Chicago than in most of the other places. Viewing the market broadly, I am not prepared to say that defendants' market is inferior to the market of any of the companies shown in Exhibit 148, other than that it is at the end of a longer line.

I do not view as a hazard the possible inability of owners to provide capital if needed in the course of the business. If six investors were going into an enterprise, it would be a less hazardous investment or enterprise to person "A" if the other five were strong financially than if they were

weak. If there is the possibility that a substantial amount of capital would be required, it is better to have as associates in an enterprise people who could provide capital if such a contingency should arise. Otherwise the company would be confronted with a hazard of having to go out and pay what the public demanded for that kind of risk.

I don't think that substantial amounts of outside capital are required by defendants from time to time. Their capital requirements can be diverted from the earnings. It is easier to divert capital from earnings when the owners of a business do not have immediate necessity for those earnings or for that portion of the earnings. If the capital requirements are the same proportionately for two companies, the company whose owners are in a position either to put up capital as required or forego earnings so that the company may use a portion of the earnings for capital purposes, is in a stronger position than the company in which those conditions do not obtain.

I would not say that defendants are in a weaker position in that respect than any of the companies shown in Exhibit 148. (Objection by Company Counsel overruled.) I do not think I connected my answer in any respect to hazards. I think an investor would take into account the
1415 fact, if true, that his associates in the business are not as strong financially as another group of associates that he might have in a business. I took no such hazard as that into account in arriving at my judgment of a fair rate of return for defendants. The companies listed in my Exhibit 148 are all in generally sound condition and that is as far as I went with that consideration. The position of defendants on that point was not taken into consideration in arriving at my ultimate judgment.

I don't know how a high investment per unit of capacity or unit of production would be considered as a hazard. You ask whether an investor looking at two businesses, both of them producing the same product, and observing that one of them has a higher investment per unit of production and a higher investment per unit of capacity, would be inclined to require a higher yield from that company than from the company with the lesser investment per unit of production. I cannot answer that question. I don't understand it. I cannot answer your question as to whether a company with a capacity factor of 20 per cent would be more risky than one which has a capacity factor of 50 per cent, all other things being equal.

I do not see why the possibility of over-capitalization of an enterprise in which an investor is about to invest is a distinct hazard to that investor. (Objection by Company Counsel overruled.) You ask if over-capitalization of Southern Natural Gas Company did not result in a distinct loss to my firm which had an investment in that company. Over-capitalization is a very loose term and I do not know how to answer that question except that on account of the depression coming on, the company was not able to pay interest and sinking fund charges that accrued. It was not able to earn enough to support its capital structure, including the sinking fund and taking account of the extreme depression. I cannot answer whether or not the possibility of that happening to any company is a hazard to an investor in any company. In my judgment defendants are not capitalized at all, in the sense that its securities are distributed. It is more an effective partnership. I do not consider defendants over-capitalized under the present distribution of securities.

In my testimony on direct examination I spoke of river crossings as one of the hazards. I made somewhat of a comparison of that feature of defendants with a similar feature of the operations of the companies set out in Exhibit 148. I compared the situation of defendants on this point with some of the companies listed in that exhibit, including Interstate, Southern Natural, Memphis, El Paso and Mountain Fuel. I have always been fairly well informed as to Interstate, Southern and Memphis. I have gained my information regarding the others some time within the last few weeks. I cannot tell just when. I don't remember whether it was before my direct testimony or not.

I spoke also of the possibility of salt water intrusion into the wells of defendants as a hazard which they faced. I have not compared that possibility with the possibility of salt water intrusion into the wells supplying the companies listed in Exhibit 148.

As to failure to make adequate provision for depreciation and depletion or for amortization, I think the investor would inform himself about it and if he is informed it
1416 would not be a hazard. Inadequate provision by the management for that purpose might happen with one company as much as with another. I suppose such a development might work to the disadvantage of the investor. I cannot see how that would work out. I think an investor

satisfies himself about depreciation and depletion and amortization. Yes, the making of proper and adequate provision for depreciation and depletion and amortization is considered necessary for the protection of an investor in an enterprise of this nature. Yes, there is a possibility that such provision will not be made just as there is a possibility of almost anything happening. There have been cases where public utilities have not provided enough, but I do not think of any cases where they have provided enough until the investor got hooked, so to speak, and then stopped making provision. I do not think in those cases where inadequate provision was made for depreciation the investors were a fixed static body. The personnel of the investors may shift more or less from time to time. The damage in a case where inadequate provision for depreciation had been made would come from a falling off in earni s.

The purpose of making provision for depreciation is primarily to make replacements when necessary. One theory is that it preserves intact the investment. I do not think it is necessary to make the so-called value of the property plus the depreciation reserve equal to the original investment. As I understand the function of reserves they are to provide for replacement and for retirement of property when retirement takes place. Provision is made for depreciation through annual accruals. That is the first step in the process. I don't see why the possibility that the management will fail to make proper annual provision for depreciation, depletion and amortization is a hazard in this business any more than it is in any other line of business. It is an ordinary business hazard, if that is the way you look at it. It is like any other possibility. I don't see how an investor can differentiate in that respect between two companies or two businesses. I do not call the possibility that the company may make inadequate provision for depreciation and depletion a hazard. Certainly it makes a difference to the investor whether or not the company makes proper or improper provision for depreciation and depletion. It is a question of what they are doing at the time. If after the investment is made the company the following year fails to make adequate provision for depreciation and depletion, such circumstance, generally speaking, does not make the investment look as good as it would if the company had earned that depreciation. I don't see how an investor contemplating investments in an array of

different types of businesses or different businesses of the same type could take into account the possibility that some one or more of them might make inadequate provision for depreciation and depletion.

(At this point counsel for complainant announced that pursuant to a suggestion of the Examiner he was withdrawing the original Exhibit 156 and was substituting therefor photostatic copies of it. The substitution was permitted by the Examiner.

Counsel for complainant then withdrew Exhibit 157 and produced another document which he described as a certified copy of Mr. Gallagher's testimony before the Illinois Commerce Commission in connection with Exhibits 2 and 2-A, which are incorporated in Exhibit 156. In the proceeding before the Commission last named the testimony covered by the certification began with page 12 and ran through page 99. The counsel for complainant requested that it be marked as an exhibit. At the direction of the Examiner the document referred to was marked for 1417 identification as Exhibit 157.

Exhibits 156 and 157 were offered in evidence. The Examiner withheld his ruling until the following day.)

In my direct testimony I stated that my office receives publications dealing with the gas industry, including the "American Gas Association Monthly" and the magazine "Gas Age". I think we receive the magazine "Gas" which you state has now recently been absorbed into another trade magazine. We use these magazines and similar publications to keep informed of developments in the field. They are standard trade journals. We also keep in our files Moody's Public Utility Manuals and Poor's Public Utility Manuals. We consult those frequently for information with respect to the different utility industries and the different specific utilities.

I think that in my testimony in the summer of 1934 before the Master in the Chicago District Pipeline Company versus Lindheimer case I stated a portion of the method which I myself embodied in Exhibit 49 in that case.

(At this point counsel for the Commission produced a document with the request that it be marked for identification. At the direction of the Examiner the document was marked for identification as Exhibit 167.)

Exhibit 167 is apparently a photostatic copy of my Exhibit 49 put into evidence during my testimony in the case of Chicago District Pipeline Company versus Lindheimer.

Included in Exhibit 167 are the bonds of natural gas companies, principally production and transmission companies. In some cases distribution was involved in addition to production and transmission. I included therein all the issues of such companies from the year 1925 through 1932. I took the market price as of June 30, 1934, of those issues. That was approximately a month before I testified. I took the amount outstanding for each of those issues as of the end of the preceding year. I computed the approximate yield to maturity of those issues and also the current yields. The reason I left out the current yield was because the yield I ultimately used as the basis of my judgment was the yield to maturity.

I got a figure representing the weighted average for the current yield and the yield to maturity of the bonds shown in that exhibit. The approximate yield to maturity was 9.7 per cent. At that time I testified in answer to a question by Mr. Daily as to what yield in my opinion the bonds of Natural Gas Pipeline Company of America would have to show in order to secure capital at that time that I thought it would be reasonable to estimate the rate at 9.7 per cent, based on the current prices for the average of the 41 natural gas bonds which I had considered, not including those on which interest had been defaulted, in connection with Exhibit 49 there and marked Exhibit 167 here. Mr. Daily then asked me this question: "In examining the data as to the 55 natural gas companies which issued the 73 natural gas bond issues shown on Plaintiff's Exhibit 49, did you investigate the question of the data available as to some of the companies with respect to the relation between their outstanding bonds and their preferred and their common stock, that is to say, as to the relative amounts, and, if so, how many companies did you find as to which such data was readily available?" To this question I answered "23". Mr. Daily then asked

1418 me whether I had studied those 23 companies for the purpose of determining the average proportions between the issues of bonds, preferred stock and common stock, and what I found to be the proportions. I answered that I had made such a study and found that bonds on the average constituted 49.7 per cent of the investment and preferred stock 13.9 per cent, leaving for the common stock equity 36.4 per cent. Determining that relationship was a step in the development of the method by which I arrived at my conclusion at that time as to the return,

based on the exhibit which has been marked Exhibit 167 in the present case.

I then proceeded to read or have incorporated into the record the 23 companies in question from which I got those average figures showing the relationship of bonds, preferred and common stock. Then the following questions were asked me by Mr. Daily and were answered by me: "Question: Will you now state again, if you have not already stated, the basis on which you selected those 23 companies? Answer: Well, those were the companies from which I could readily determine the data without too great research and computation being involved. Question: What would you say as to whether or not at the present time if bonds of a natural gas enterprise were to be marketed, it would be good practice to issue more bonds in proportion than those you have indicated? Answer: I think the proportions I have indicated as to bonds would be good practice as of the present time. The proportion of preferred stock is probably somewhat low."

Mr. Daily then asked me whether I had made a further study for the purpose of determining the relation of the yields of bonds and preferred stock and of earnings on common stock for natural gas companies, to which I replied in the affirmative, adding that as in making this study it was necessary to go back for a period of 10 years, I had confined my analysis to 7 natural gas companies. That 10-year period was approximately 1924 to 1933, the 10-year period preceding the year of my testimony, which was in 1934. I then proceeded to name the 7 companies I had used. I was asked to state the proportions which I determined from that study. My answer was that the ratio of the preferred stock yield, that is, the preferred stock dividend rate divided by the average market value of the preferred stock, was 1.1 times the average yield of the bonds to maturity. The earnings of the common stock equity were at the rate of 1.4 times the maturity yield of the bonds.

In answer to another question as to whether those yields were representative of the proportions attained in the better class of companies in that industry I stated that I thought the ratios were comparatively low, that is, that ordinarily it would be expected that the preferred stock yield and the common stock yield would be greater with respect to the bond yield. Mr. Daily then asked me to give the comparative figures as to preferred stock and common

stock that would result if I took the bond yield at 9.7 per cent instead of the 1.00 assumed as the basis of comparison. My answer was that the comparative yield for preferred stock would be 10.7 per cent and for the common stock equity 13.6 per cent. I then answered that if those figures be applied to the proportions between bonds, preferred stock and common stock which I had stated I derived from a study of the 23 companies, the result of the calculation with respect to the return upon the securities as a whole would on a weighted average basis be 11.25 per cent. I explained that the figure last named was 1419 derived by multiplying 9.7 by 50 per cent, the 9.7 being the necessary bond yield which I derived and the 50 per cent being the proportion of bonds to the total investment. For preferred stock I took 14 per cent and multiplied it by 10.7, the necessary preferred stock yield, which gave 1.5. Multiplying 36 per cent by 13.6, the necessary rate of earnings on the common stock, gave a result of 4.9. The sum of the products was 11.25 which represented the average rate of return estimated to be necessary on the whole property at the rates determined. I then testified that, in my opinion, the figure last mentioned fully measured the rate of earnings which would constitute a fair rate of return to a natural gas enterprise of the character and in the position of Natural Gas Pipeline Company of America as based on the experience of other companies and the market appraisals of such investments.

If I were to bring that exhibit down to date, I would take the issues that were shown in that exhibit and for the first step include those which are still in existence; and I would include also such refunding or replacement issues as I found replacing or refunding the issues used. I would also include such other financing as had been done by similar companies in the period 1933 through 1938. That would give me a list of securities to start with. If I were testifying as I did here at the early part of October, I would take the market price of those securities as of August 31, 1939, and from such market prices would determine the yield to maturity of each of the issues there shown. I would then determine the weighted average yield to maturity. Then having determined that weighted average yield to maturity, in order to arrive at a final figure which would be comparable to the figure of 11.25 per cent return which I arrived at in the Chicago District Pipeline case, the first step would be to multiply that

weighted average yield by 50, if I found that to be the approximate proportion of bonds at that time.

I would determine the proportions of bonds, preferred stock and common stock now. When Mr. Slaff put the last question to me I thought he referred to that step and not to the 50 per cent. I cannot tell as to whether it would be 50 per cent or how near 50 per cent it would be today. Yes, I testified at the beginning of my cross-examination that a sound capitalization for a natural gas company today would be approximately 50 per cent bonds, 25 per cent preferred and 25 per cent common stock. On the basis of my 1934 study as to the proportionality of bonds, preferred and common stock, I would, in coming to my final figure, take as the first step the multiplication of my weighted average of bond yields by 50 per cent, if I found that to be the proper proportion now. If I found those same proportions to exist today between bonds, common and preferred stock, I would multiply the weighted average of bond yields by 50 per cent. If I found the same ratio to exist between earnings on preferred and earnings on bonds and the same proportionality to bonds, I would then multiply as my next step the weighted average bond yield by 1.1 and then by 14 per cent. The final step on the same basis would be to multiply the weighted average bond yield by 1.4 and then by 36 per cent.

That would give me an overall figure comparable to my figure of 11.25 per cent in the Chicago District Pipeline case on the basis of those same units. You have asked me to assume that the weighted average of bond yields that we have been discussing here is 5.5 per cent. Based on that assumption the over-all figure comparable to the
1420 figure of 11.25 per cent in the Chicago District Pipeline Company case would be 6.38 per cent. That is arrived at by multiplying 5.5 by 50 per cent, 5.5 by 1.1 by 14 per cent, and 5.5 by 1.4 by 36 per cent.

(At this point counsel for the Commission offered EXHIBIT 167 in evidence. The Examiner reserved his ruling until the following day.)

At the time I testified in the Chicago District Pipeline Company case I stated that a company should not be left on the verge of starvation and that therefore a liberal allowance should be made. After I explained how I had arrived at the figure of 11.25 per cent, I testified that that figure represents the rate which would command capital,

in my judgment, without additional reward to the company for operation and management. I stated it would be a minimum rate; and in all probability it would be more than that. I was referring to that rate of 11.25 per cent. I then stated that I thought that an addition should be made to this computation for the reason that in order for any business to be in a position constantly to furnish high grade service to its customers, the company must not be kept on the verge of starvation, that is, it must be permitted to earn something more than the rate which would just barely command the capital. I was referring to defendants in making that statement. The sense of my testimony was that something in addition to 11.25 per cent should be allowed. The expression, "The company must not be kept on the verge of starvation," was mine. I then went on to testify that a reasonable return for a company of the character of defendants would not be less than 12 per cent after allowance for amortization and depreciation.

There has been a time in the last 20 years when bond holders demanded a very high amount of the total earnings as during that period 1932, 1933 and 1934 and most of the bonds carried warrants or some features which gave them valuations in excess of what would be indicated by their coupon rate. I think generally the coverage demanded now is greater than it was then, particularly to obtain acceptance by investors. In determining the relation of the yield of bonds and preferred stocks and of earnings on common stocks for natural gas companies, in which I used the yield on bonds as 1, on preferred as 1.1, and on common stocks as 1.4, I went back for a period of 10 years from the time I was then testifying.

That average yield of 9.7 per cent was the average for only 7 companies. The reason I could take only 7 was because I wanted to go back for a period of 10 years, as I stated in my answer read to me earlier today. The document to which I have been referring is the transcript of the 1934 case and I have also referred to my own notes in the 1934 case.

I testified earlier in my cross-examination that I had previously testified a year and a half or thereabouts ago in the Interborough Rapid Transit Company tax case. I was appearing there on behalf of the receiver for that company. The question of how much that company should take as an income tax deduction for annual amortization

of the value of its contracts to operate the New York subways, was involved there. The Interborough in that proceeding was interested in arriving at as high a value for its right to operate those subways as was possible. The higher the valuation, the greater the annual deduc-
1421 tion would be. I made a valuation on the basis of what a willing purchaser would pay for that system, buying it from a willing seller. I don't remember that there was anything like capitalization of the earnings. The present value was estimated by discounting the estimated earnings. I suppose there are two senses in which the word "capitalization" can be used. One is to place an amount against the capital account and the other is, as the saying goes, to capitalize earnings by dividing them by the required rate of return and arriving at a capital value that they would support. I don't think it was in the latter sense that I capitalized the earnings of the Interborough at a certain rate of return in order to arrive at the figure of value. I think it was a plain discount.

In my direct testimony I testified that: "At the discount rate of 6 per cent and the accumulation rate of 4 per cent as determined, I computed the value represented by annual earnings of $8,230,000 from March 1, 1913, at 1968 at $127,000,000." The accumulation rate of 4 per cent mentioned in that portion of the answer just read referred to the amortization fund that was being built up to amortize the investment. You ask me if I remember that on cross-examination the following question was put to me: "Of course, your figure of $8,300,000 as average earnings on which you relied in arriving at your March 1, 1913, valuation was an earning figure in excess of the earnings of the subway for the prior periods or periods prior to 1913?"; and if I did not answer: "It was a little in excess of it then, yes." You also ask if I was not then asked the question as to whether I capitalized, in a general sense, this figure of $8,300,000 in arriving at my valuation, to which I replied "Yes." I remember counsel asking me about that but I corrected that afterwards in the cross-examination. He referred to it again as capitalization and I corrected it. I do not understand at all that that is essentially what was done.

If I had used a higher rate of return than I used in the computation in that case, I would have arrived at a lower

value. The higher the rate of return used as a capitalization basis, the lower the value that is reached. If in the Interborough tax case a rate of return higher than 6 per cent had been used, I would have arrived at a valuation lower than that reached. In that case I did use a rate of return of 6 per cent.

I testified in the Brooklyn Rapid Transit Company franchise tax case about a year or so ago. I don't remember whether the tax on the franchise value of the Brooklyn Rapid Transit Company or one of its subsidiary companies was involved in that case. In effect it applied to the Brooklyn Rapid Transit Company. The problem there was to find the franchise value of the company for tax purposes.

I was aware at the time I testified of the method in New York as set down in the case, I believe, of Jamaica Water Supply Company against the Tax Commissioners, of arriving at franchise value. The method set out in that case is to ascertain the gross earnings, deduct the operating expenses, which gives the net return, and then deduct a fair and reasonable return on that portion of the capital of the corporation invested in tangible property. The resulting balance gives the earnings attributable to the special franchise. Then if the balance be capitalized at a fair rate, you have the value of the special franchise. The less deducted as applicable to earnings on the tangible property, the greater the franchise value. I testified
1422 in that case that a fair rate of return on the tangible property of that company was 6 per cent, the tangible property being defined as the cost of reproduction new less a substantial amount for depreciation, which gave an amount substantially less than the bonds outstanding secured by the property.

With respect to my Exhibit 149, in preparing the exhibit originally I assumed that the cost of a line operating at a lower pressure was the same as the cost of the present line. I made the comparison on that basis. That is to say, I assumed that the cost of the entire project was the same in either case. As to whether or not defendants would require less reserves if they were selling less gas, I think that is entirely a matter of expectancy. I do not know enough about the field or the conditions there or the conditions confronting defendants to say. I have assumed that it would take the same amount of reserves in both

cases. Generally speaking, a company which requires only 80 per cent of the gas that another company requires, does not require the same amount of reserves; but I do not know about the conditions under which defendants acquired their reserves. On the face of it they would not require the same amount of reserves as they do now if they were using only 80 per cent as much gas as now used, but, as I say, I do not know the conditions under which defendants acquired their reserves. Other things being equal, it might appear that they might get along with less reserves; but I do not know about the conditions surrounding defendants or what the expectancy was, or what they were confronted with in providing for their reserves. In my Exhibit 149 I have assumed other things to be equal so far as the line costs are concerned.

That exhibit shows the defendants would use only approximately 80 per cent of the gas which they now use, if they were to operate at the lower pressure. As to whether or not defendants would require the same amount of reserves that they do now if they were selling only 80 per cent as much gas under the conditions portrayed on my Exhibit 149, I can only repeat my answer that I do not know enough about the field or the conditions under which defendants bought their acreage to say. On the face of it, it would appear that they could get along with less, but I do not understand that the required reserve would be the proportion their holdings are exactly to what the line is taking.

In my testimony and exhibit I undertook to make certain comparisons of what I deemed to be important factors in this case. One of those was the comparison between the investment in the company operating at its present pressure, and an investment in the company operating at a lower pressure. I assumed in my direct testimony that the investment was the same. That assumption was based in the first instance, if we took this by steps, on the assumption that the company would require and would have the same amount of gas reserves operating at a lower pressure as it now has. As to whether that is a valid assumption I don't know. There may be other considerations in there. I think very likely there were. I don't know of any other.

So then we can summarize the situation in this respect by saying that I do not know of any conditions which

would require defendants, if they were using only 80 per cent of the gas which they are now using, to have the same amount of gas reserves that they now have.

1423 I do not think it is correct to say that defendants, if they were to produce and use 80 per cent of the gas that they now produce and use, would not require as many wells as they now have. I think the drilling of wells is governed by the proving and protection of leases more than by the amount of gas required. In the course of years the amount of gas required does have a certain effect on the number of wells drilled, but not in the earlier years. As time goes on the amount of gas produced or required by a company is an important factor in the number of wells that are drilled. (Objection by Company counsel overruled.) Other things being equal, a company producing only 25 per cent of the gas that defendants require would not drill as many wells as defendants would. The number of wells depends upon the development of the field, which has been generally going on up to this time, and I would think that the number of wells would not be affected by the circumstance that defendants were taking only 80 per cent as much gas as at present. During the development of the field the number of wells drilled depends very little on the requirements of the particular company for gas. By "development of the field" I mean the period of exploration and the protection of acreage. It is my understanding that the Texas Panhandle field is still in the development period. From the viewpoint of going concern value to which I have testified, Texoma is a company whose reserves are in a field where the developmental period still continues.

1424 In my judgment a company which required 80 per cent of the gas which defendants have required in the last 7 or 8 years would have drilled the same number of wells as defendants have drilled, if it had purchased the same acreage that defendants purchased. I can not name any reasons why defendants would have bought the same amount of acreage if they had required only 80 per cent of the gas they had actually taken. All other factors being equal, if defendants had required 80 per cent as much acreage as they did, I think they would have required fewer wells to protect it. As to whether or not the company requiring 80 per cent of the gas that defendants require would not need the same amount of gathering lines that

defendants now have, would depend upon the distribution of the acreage. Other things being equal, it would not require as much gathering line. I don't know whether it would require the same amount of field measuring and regulating station equipment that defendants now require. Generally speaking, other things being equal, if the acreage were less, the field measuring equipment might be less. Generally speaking, other things being equal and if the acreage were less, the whole natural gas production plant would be less.

Under the same circumstances, the company operating at 500 pounds pressure as compared with a company operating at higher pressure would require less compression equipment at the field station. It would not require less compression equipment at the stations along the line. The investment would be less at the field station and slightly less at the line stations on account of less cost of fitting. This was the first time that a line was operated at those high pressures. So far as I know, it was not necessary to make special designs for the compressor station equipment all up and down the line to operate the line at those high pressures, except that defendants have been put to some expense in replacing compression pistons.

In the matter of discharge pressure, there was considerable advance above what had been done before in the industry as a whole. I do not know of my own knowledge but I am informed that this circumstance did not involve more expense for equipment than for equipment which had been standard up to that time in the industry.

With respect to the pipeline itself, I have made comparisons as to the cost of pipe for a pipeline operating at 500 pounds pressure and this pipeline over the same route. I have had comparisons made of the actual line and the principal items in a line built to the conventional pressures and stresses with the material available before this company undertook its research, which would be a lap weld pipe, stressed to 15,000 pounds per square inch and 13-32 inches in thickness. The cost of a line of conventional type would have been, including the compressor stations and an allowance for a reduction in the gasoline and refrigeration plant, $2,367,164 more than the actual cost of this line.

As I have explained, I have had the difference computed in the important items, and applying the difference

in the important items, I get an estimated cost of $52,197,643 for the pipeline, compressor stations, gasoline and refrigeration plants; as compared with a book cost of $49,830,479. Subsequent to the presentation of my
1425 direct testimony here, and in pursuance of an answer to the Examiner's question, I asked Mr. Brown of our organization, who is familiar with such things, to make me up such an estimate. As I stated, he has only computed the important items that would be affected. I have not said that Mr. Brown was able to compute the cost of building a pipeline in 1930 and 1931 from the Texas Panhandle to Chicago to operate at 500 pounds pressure, in three weeks' time. Derived, as I explained, by computing the difference in cost of the important items that would be changed, we reached the result I have stated.

If any further explanation of that is required, this was arrived at after consultation with Mr. Rhodes who has had more experience in building pipelines and in estimates than anyone else in our office, and it was his opinion that except for these items, there would be very little difference. (Objection by Company Counsel overruled.) Yes, our Mr. Rhodes and our Mr. Brown in arriving at the estimate in the manner I have explained, were able to project themselves back to 1930 and 1931, and in a period of two or three weeks come up with an answer as to the cost of building a pipeline from the Texas Panhandle field up to Chicago to operate at 500 pounds pressure. Ford, Bacon & Davis built about 250 miles of this line. As I remember it, they bid on other portions of the line. They were bidding on the line that was actually built.

We were engaged at about the time this line was built as engineers for the Southern Natural, which was laying just this kind of a line, and our engineers are all very familiar with the prices that go into that. I hope I do not have to say that with our years of experience in the engineering business, we would not try to impose on this Commission. (Commission Counsel renews his motion and offer in evidence of Exhibits 164, 165 and 166 in the light of the witness's most recent testimony with the request that portions of Exhibit 165 be read into the record. The Examiner refused to reproduce the exhibits in the record and denied the offer and motion to receive the exhibits into evidence.)

Cross-Examination by Mr. Booth.

In response to a question that was addressed to me a few minutes ago by Mr. Slaff, I read into the record a figure which was prepared by certain members of the staff of Ford, Bacon & Davis. I did not personally prepare these figures or any portion of them. I did not participate in or supervise the construction of any portion of defendants' pipeline built by Ford, Bacon & Davis. I have very little to do with construction now. I used to years ago. That was 30 or 40 years ago.

I have given incidental attention to it at various times. I had something to do with the Edmonton line in the way of going over the job while construction was in progress, and at different times I have had something to do in the construction work, but not a great deal.

I am a member of the Executive Committee of our organization and executive matters come before that body. I keep up with them in an executive way.

Cross-Examination Interposed by Mr. Slaff.

Regarding the incident as to the changes in the bank interest rate to the Southern Natural, I think I might be permitted to say that that letter from the bank was dated July 13. I was out of the office from June 30 to September 2, except for one day in the office. I do not think I have known about that anyhow, because it is an administrative matter and it probably would go before the board of directors when they met. I doubt very much that I would have known about it unless I had come across it in going over their monthly report. I have said
1426 that I am a member of the Executive Committee of my firm.

Cross-Examination Resumed by Mr. Booth.

I hardly know how to characterize my participation in the construction activities of the company in the past 15 years. I am an officer and a director of the firm, and a director of our construction corporation. It seems to me that my connection with construction has been a little more than nominal, but it has not been extensive. There is a corporation that handles most of the construction activities

of Ford, Bacon & Davis. It is known as the Ford, Bacon & Davis Construction Corporation. There are about 200 men altogether in the Ford, Bacon & Davis organization. It has a subsidiary construction corporation which for the last four or five years has done very little and has nothing more than a skeleton organization at present. That is due to the decline in its construction contracts. This separate construction corporation handled the building of such part of the line of defendants as was constructed by Ford, Bacon & Davis. The contract was with Ford, Bacon & Davis, Inc.

Mr. E. G. Hill, the president of the construction corporation, is in charge of the construction of most pipeline work. Mr. Whitaker has charge of the construction of the electrical work. I have never supervised the construction of a 24-inch pipeline, a 22-inch pipeline, or a 20-inch pipeline.

I think the Edmonton line was 16-inches, but it was constructed quite a number of years ago. I did not supervise the construction of that line. I think it was built about 1925.

Only about 10 or 12 per cent of my work has been in utility rate cases in the past few years. You ask me to assume the construction of a pipeline such as is owned by defendants and also the organization of a corporation such as Texoma in 1930, and that the investors were advised at that time by reliable and competent geologists and engineers that the property would have a life of 25 years, and to state over what period the investors would expect the property to be amortized. They would expect it to be amortized during the life of the project, not necessarily during the first year of the company's operations. No, the company would not wait until the 24th year. I think that when the earnings permitted the company to either amortize the investment or to set up a sinking fund for amortization, it would begin to make provision for amortization. You ask me to assume the company had substantial earnings during the first, the second and the third years of its operation. (Objection by Company Counsel overruled.) That is such a wild assumption that I cannot give any consideration to it. That is such an unusual combination of conditions that I am unable to apply my mind to it. For a pipeline to earn so much money during the first few years that it can amortize part of its property is an unusual combination of conditions.

I think that when it has earned a fair return on the investment from the time of the beginning and has accumulated a cushion fund, it would ordinarily be prudent to amortize the investment in one way or another, generally by retiring bonds. I am somewhat familiar with the history of defendants. You have asked me whether or not, based upon my study of the defendants' operations, they earned enough to set aside anything for depreciation or depletion during the first full year of their operations in 1932. (Objection by Company Counsel overruled.) They did not. That is my recollection of the situation. I think the defendants set aside a small amount for depreciation in 1933. I do not recall the amount. My recollec-
1427 tion is that it was something like a million dollars, and that a similar sum was set aside in 1934.

The indenture provides for a serial retirement of the bonds of defendants. I do not recall when the retirement was to begin. It was a few years after the line was placed in operation, but I do not remember the date. The bondholders, where bonds are distributed among the public, would require that a sinking fund begin as soon as the earnings permitted. That is a reasonable requirement.

You have asked me whether or not I consider it appropriate for the management of a company such as defendants to defer providing for amortization of the investment in a property such as this because they felt that some time during the operations of the company and before the company went out of business that the business would be subject to regulation at some future time. Supposing they felt that at some time during the operations of the company the business would be subject to regulation, what would they have to expect then? My answer is that I would not think that the appropriations for amortization would be governed by any such consideration as that. I should think that such appropriations would simply be a function of the earnings available and the expected time of passing out of business. (November 4, 1939.)

(At this point EXHIBIT NO. 157, theretofore offered in evidence by counsel for complainant, was received in evidence.)

Questions by the Examiner.

I have not made a figure for figure check of Exhibit No. 167, but I have no doubt but that it is an exact copy of Exhibit 49, of which it purports to be a copy. I have made

a spot check of it which satisfied me that it is a true copy. I checked the heading and several items here and there.

(At this point, EXHIBIT NO. 167, theretofore offered in evidence by counsel for the Commission, was received in evidence, over the objection of counsel for defendants who were allowed an exception.

At this point, counsel for the Commission presented a document described as a copy of Exhibit 153 for identification, certified by the Secretary of the Securities and Exchange Commission. At the direction of the Examiner, the document was marked Exhibit No. 153 for identification. The previous uncertified copy of the same document, heretofore marked Exhibit No. 153, was stricken from the record. EXHIBIT NO. 153 was then offered and received in evidence without objection.)

Cross-Examination by Mr. Slaff.

The bulk of such financing as has taken place in the natural gas industry since 1934 has been debt financing. I cannot say definitely that practically no common stock financing has occurred in that time. I think there have been sales of stock, but I cannot name them definitely. The volume of stock transactions would be small in comparison to the transactions in bonds. The same is true of preferred stock financing since that time.

I have been working on testimony and preparation of testimony on rate of return in this proceeding and in the one which immediately preceded it before the Illinois
1428 Commerce Commission, off and on for 18 months. In this period, I did not undertake this extensive computation involved in my Exhibit No. 149. You state that it was not such an extensive computation. It was quite a study. It is a question as to what you mean by "extensive" as compared with a "non-extensive" computation. I think there were more people engaged on that computation than 2. The time involved, as I remember it, was between three or four weeks. We arrived at an answer within three or four weeks after my direct testimony. When I testified on direct that was what I considered such an extensive computation that in the 18 months I had to prepare my direct testimony I had not done it. At the time I was testifying on direct examination I thought that, considering the use of the computation, it was not warranted at that time.

The interest rate on the Lone Star Gas Company bank loan referred to in Exhibit No. 148 was reduced from 2¾ per cent to 2⅜ per cent, some time in 1939. I have the date here as September 18, 1939. I don't know whether that is the date of the S.E.C. authorization or the date of the reduction. I found out about this reduction some time during the course of our study. I doubt if I knew about it before I testified on direct. The note I am now looking at reads "Lone Star Gas Company, interest on bank loans reduced 2¾ to 2⅜, authorized by the S.E.C. September 18, 1939". That is part of my working papers. It was authorized by the S.E.C. on September 18, 1939.

I testified here in October on direct, and put Exhibit No. 148 in evidence at that time. No, that is not one of those things that I was going to bring up on redirect. That reduction in interest had no bearing whatever on Exhibit No. 148 or on anything that I testified to. I think it had very little bearing on the subject of rate of return. I don't think it had any bearing on the subject of rate of return because, in effect, it would increase the equity earnings. Bank loans to gas companies today are governed more by the plethora of money in the banks. The amount of money in the banks has a great deal to do with the rate they ask for the notes. That has very little to do with the subject of rate of return to a company. I think it has very little effect on the final answer. I don't think it has anything to do with the subject of the determination of a fair rate of return for a company under regulation, except insofar as it is necessary to set it up in determining the entire amount of money invested in a company and the return shown thereon.

If I may explain directly to the Examiner, I have not undertaken to bring any of this data that I have shown up to the present stage. I have presented an exhibit as to the situation December 31, 1938, and I do not feel that it is incumbent on me to go through all of the records and bring up notations of this kind whether they affect the answer or not. Exhibit 148 deals entirely with 1938. May I add that Mr. Timberlake reminds me that data on one of the companies is given for 12 months to March 31, 1939.

There was only one issue of bonds of the Southern Natural Gas Company and there was one maturity date for the whole issue, but they were callable at different prices in different years. The maturity date is October 1, 1951. I don't think any of them matured in 1952. This record

shows no such maturity and my memory does not recall any. When I say "this record", I mean my underlying work papers.

As of December 31, 1938 there were $1,409,000 of Alabama Gas Company, First Mortgage, 4½'s of 1951 outstanding. The report to the stockholders shows $1,385,000.

I do not know which is right. The report to the
1429 stockholders shows bank loans outstanding at December 31, 1938 of $1,475,000. This was a collateral note to the New York Trust Company at 4½ per cent. There were other bank and current liability notes to the extent of $188,838. It is about $100,000 different from the figure shown on our exhibit. I am not able now to explain why it is different.

Poor's Manual shows 1st mortgage 4½ per cent series due April 1, 1952, outstanding as of December 31, 1938, in the amount of $616,000, and that, together with the amount outstanding of the series due October, 1951, gives the total of $13,555,000 shown on page 5 of our Exhibit No. 148; so it appears there are two series maturing at two different dates in those 1st mortgage bonds shown on page 5 of our Exhibit No. 148. I think the exhibit does not show that. I have not mentioned that there were two series in my testimony. The information as to earnings and security prices was obtained from Moody's.

Southern natural is the company in which our firm has a substantial interest. I should know the facts about the Southern Natural Gas Company.

In my testimony on going concern value in the Syracuse Gas and Electric case before the New York Commission, I included as a part of the build-up of the figure of $4,000,000 finally arrived at there for going concern value, the fact that "the area now known as Syracuse was once the capital of the Great Iroquois Indian Confederacy." I made that statement. I also made the statement that "Syracuse is also possessed of a university ranking 22nd in size among the country's 700 similar institutions." The only use I made of my reference to the Indians around Syracuse and that the University of Syracuse was there, in discussing the going concern value, was that I drew a picture of the territory in which the company was operating. No consideration whatever was given to that element in arriving at my conclusion.

Cross-Examination by Mr. Booth.

On the question of reserves of the defendants, I indicated that one of the hazards in the minds of investors in determining the risk of investing in companies of this character is the question of failure of the reserves—that the gas will fail before the estimated life of the field. You ask whether or not that was one of the hazards I took into consideration in arriving at my conclusion as to what constitutes a proper rate of return for this company.

To answer that question I will have to explain that I did not make any definite allowance for hazards, and only took them into account to the extent that I satisfied myself that there were no greater hazards of exhaustion in the case of the average of these other companies than in the case of defendants.

Yes, I testified at page 5277: "The amount of gas available on which the life of the pipeline depends is bound to be known only to the extent of an estimate, the geologist's estimate which may be right and may not be." I made no independent investigation of the studies or reports that the geologists have made with respect to the life of the Panhandle field.

I have stated that I testified in the Chicago District Pipeline Company case on the subject of rate of return.

1430 I was not advised that J. D. Thompson, a geologist, testified as to the life of the reserves of the Panhandle field in this proceeding. I did not even know what he testified to in this case. I have no recollection that I was advised in the Chicago District Pipeline Company case that the same Thompson testified in 1934 that there was only a 12-year supply of natural gas in the Panhandle field. I am quite sure that I did not have that information. (Objection and motion to strike by company counsel overruled and denied.)

In the question propounded to me at page 5275 by Judge Morgan in which he asked me whether I had stated in my prior testimony that I was familiar with the natural gas business in all of its phases, I took his implication to refer to my firm rather than to me personally, as I had previously testified. I don't think I am familiar with the natural gas business in all of its phases. I would not claim to be personally.

I have made no investigation of the depreciation of the

property of the two companies, except to the extent of Mr. Hill's trip at the beginning of our work. I did not make that trip, it was made by Mr. Hill.

I do not have an intimate knowledge of the element of fatigue as affecting the property of defendants. I have made no systematic inquiries to determine the effect of fatigue on their property. I have discussed it to some extent. I have made no study of fatigue.

I have made no independent investigation of the effect of the physical factors in connection with the operation of defendants' plants and property, except to the extent of Mr. Hill's observations.

Exhibit No. 130 constituted the basis of my conclusions on the subject of going concern value. Of the $8,568,000 shown on that exhibit, $4,859,896 constitutes the charges for interest on that portion of the capacity provided in advance of attached business.

1431 It was arrived at by taking certain proportions of the interest paid during 1932 to 1935, inclusive, due to the fact that the company had not utilized the full capacity of its line during each of those years. Yes, I know that the interest the company pays on its bonds is 6% per annum. Yes, if the interest rate on the bonds had been 12% instead of 6%, the interest instead of being $4,859,000 would have been twice that amount or approximately $9,750,000, and the going value which I found in this case would have been substantially greater under that assumption.

Yes, if in fact the ad valorem taxes of the company had been twice the amount $1,163,156 during 1930-1935, the item of ad valorem taxes constituting a portion of the going value which I found would have been as much as twice $396,000. Under those circumstances, naturally, the going concern value in this case based on this exhibit would have been affected. The item of depreciation was one of the principal factors entering into my conclusion on going value.

The figure I used for depreciation in that computation was taken from Mr. Biddison's conclusions as to the amount of observed depreciation. What I did was to allocate to those four years the proportionate parts of the total amount of existing depreciation determined by Mr. Biddison to have existed in the property of the company. I assumed that it took place uniformly year by year and

assumed that Mr. Biddison's figures based on inspection were correct. I made no further independent inquiry on that point than I have stated here. If in fact the Commission should find that the existing depreciation of the property should be 20% as you suggest instead of 5% as found by Mr. Biddison, they would have to increase the amount for depreciation in my computation of going value about four times and the going value would have to be increased by the same amount.

Yes, the next item included in the exhibit as one of the elements going to going value was the expenses not affected by the volume of gas handled, in the amount of $3,499,037. In using those figures I assumed that the company was efficiently managed and operated. If it be assumed, as you suggest, that the company was not efficiently managed or operated and expenses of operations not affected by the volume of gas handled were substantially greater than those recorded on the company's books, and which I have used in this exhibit, that would have the effect of increasing the amount to be included for that item in the going concern value. However, I don't think that such a conclusion is justified here, for reason is applied to all such estimates. I did not make an independent investigation of these expenses to determine that they were in fact reasonable. I took the company's expenses for these classes of items as they were handed to me by the accounting officers of the company.

It is not true that if this study made in 1939 had been made in 1945, and it appeared that the lag which I found to exist between 1932 and 1935 had extended up through 1945, the going value in 1945 would be substantially greater. You inquire if the fundamental method I used in arriving at going value was the cost of soliciting business, of providing facilities, and of operating facilities in advance of the attachment of the substantially full and complete business of the company in 1936 and the substantially full operation of the company's facilities at the same time. I think that the going concern value of a business in this particular applies to the early years of a company's existence, when it is building up its business; and the rule of reason would have to apply as to how many years are taken. It has never been my practice to take over four or five years, although there may have been six in some cases; but it has been confined to that period when the business is getting going in motion.

1432 It is true that if in fact the company had attached fully and completely its business beginning in 1932 to the same extent that I found it had attached its business in 1936, there would have been no going concern value. If I were making this inquiry and found that defendants had failed to attach fully their business in 1939 I would have limited the period of development to a reasonable period. It is not true that I had in mind when I began this study of going concern value a figure of approximately $8,500,000 and that I searched around for this method to get this mathematical figure.

I did not know that Mr. Hamilton used the same method. I did not discuss my method with Mr. Hamilton. I have known Mr. Hamilton for many years. I knew he was employed on the valuation of the physical property. I really did not know that he had been called in on going concern value. I do not think I knew it until after his testimony was presented. Then I simply knew that he had testified. I never saw his testimony.

Cross-Examination by Mr. Slaff.

In my going concern value testimony in other cases, I have searched the records of companies in the past to determine the rate of build-up of their business in early years. In some cases, that has gone back forty or fifty years. I have checked the results in early years with actual results in recent years and may have used the actual rate of build-up so derived in determining the term of the build-up period. I do not remember whether or not I have had occasion to modify such figures in any particular instances.

I think that the questions and answers you read beginning at page 3284 of the record in the Public Service Company of New Jersey case correctly reflect my testimony to the effect that the build-up period arrived at was based partly on the history of a number of underlying companies in the system, the records for which were available, and also upon my own experience, and that the records to which I referred were of one company whose operations began in 1896, one in 1890, one in 1892, two in 1893, and another in 1891. I then added that as a matter of fact I had used the historical figures which I considered agreed with my experience.

I think that in the Syracuse Lighting Case I went back into the period 1884 to 1889 to determine the rate of build-up applicable to a company which was being theoretically reproduced about 1937. This is an electric company which handles no gas. I used those figures because they checked with my actual experience.

I have no doubt that in the Public Service of New Jersey case I used as the rate of build-up of the business for a company being theoretically reproduced in 1934, the rate I found actually existed in the period 1891 to 1896. I mean by this testimony that I used the actual costs incurred during the build-up period in the beginning, not the costs of the whole 40-year period. Yes, in those cases I assumed that at the time I was testifying the particular company's business would build up in just the same length of time as it did during the historical build-up period. However, I did check these figures with my actual experience of more recent times.

In the case of such an estimate, I think no one has
1433 any right to assume in a reproduction of business that the groundwork of the business is already laid. It would be just like assuming that because the rock was blown out for a pole hole years ago, it would not have to be blown out again. I do not think of other assumptions used by me in those studies of going concern value that I wish to comment on at this time.

You ask me if it is not a fact that if the management of this company had, during the period 1932 to 1935, been less efficient and because of that lower efficiency the expenses not affected by the volume of gas handled had been greater than those reflected on page 1 of my Exhibit 130, my going concern value would have been greater than that at which I actually arrived. If your question means 3% less efficient, that is so. If it means an amount that would be palpable, it is not; but I cannot say where the line would be drawn. I have stated that the rule of reason would apply to such an estimate and if there was palpable inefficiency, account would be taken of it.

If the expenses during one of those years, 1933 for example, instead of being $835,000 had been $910,000 or $920,000, the going concern value would have been greater, unless the expenses had reached the point where in my judgment there was palpable inefficiency. I made no independent determination whether that item of unvarying

operating expenses was proper or improper further than my acquaintance with the management.

Yes, for the year 1932, I had a figure of $1,072,759 for expenses not affected by the volume of gas handled. If I had found that same expense year by year for the years 1933, 1934, and 1935, I would have had a greater going concern value, subject to the limitation I included in my former answer and subject to the fact that I made no independent investigation.

Yes, I testified to going concern value in the Dayton case. I think there was considerable similarity in the nature of the testimony I gave in that case and that here. I do not know just the points of difference. In that case and here, there was no actual record and statement of the expenditures similar to this statement contained in Exhibit No. 130. Anything of that nature presented in the Dayton case would have been estimated. The general principles were the same, but I think a different consideration was given to the different elements at the time I testified in the Dayton case than I gave here.

The testimony on going concern value in the Columbus case was presented by another witness. I largely supervised the preparation of the testimony. Yes, the general principles underlying that testimony were the same as I used when I testified in the Dayton case, but there were differences in consideration of the various elements. Yes, those two cases went to the Supreme Court of the United States. I cannot vouch for the reference 292 U. S.

My testimony in the Syracuse case was before the New York Commission. The company's name is Syracuse Lighting Company and I testified two or three years ago. I have no doubt you are correctly stating my testimony in that case in reading from page 3416, in substance, that the rate base should be higher for a public service company which has the right to do business in what I consider the best part of the state for such a business. I assume that the question I answered there referred to going concern value. I would like to make an observation to the effect that in the preliminary cross-examination the specific question was put to me if I would include anything for those elements reflected on page 4792 of this record, 1434 and I said I would not. Regarding the case that extracts have been read from, at the time of presenting my testimony there I did believe, having in mind the

citations in the Indianapolis water case, that consideration should be given to the location of the property. Since then I have felt that that element should be disregarded in arriving at a figure, and I have not included anything for it.

That element would in no way affect my recognition of these costs that I have tabulated in Exhibit 130 relating to the provision of facilities in advance of attached business. It would not enter in any way in my recognition of these costs. The Indianapolis case was decided about 1925. You ask if, because they could make a higher profit in that portion of the state in which they were located than they could in any other portion of the state, they should have a higher rate base. Without having an opportunity to refresh my mind by reading the context of this quotation, that was the purport of my testimony in the Public Service Company case.

(November 6, 1939)

(At this point, counsel for the Commission handed the reporter a document described as a photostatic copy of facing sheet and pages 164, 165, and 167 of Poor's Public Utility Volume, 1939, with the request that it be marked for identification. At the direction of the Examiner the document was marked for identification as EXHIBIT NO. 168. The exhibit was offered and received in evidence without objection.

Counsel for the Commission then handed the reporter a document described as a photostatic copy of facing page and pages a-55 to a-61 of Moody's Manual of Investments, Public Utility Securities, for the year 1939 with the request that it be marked for identification. At the direction of the Examiner, such document was marked EXHIBIT NO. 169. The exhibit was offered and admitted in evidence over the objections of defendants who were allowed an exception.

Counsel for the Commission then presented to the reporter a document described as page 250 of the American Gas Association Monthly for July-August, 1939, with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 170.

Counsel for the Commission next produced a document described as photostatic copies of pages 19, 20, and 37 of the magazine "Gas" for July, 1939, the same being an article "The Investment Attributes of Gas Utility Securi-

ties," by Percy S. Young, with the request that it be marked for identification. At the same time, counsel for the Commission stated that this was presumably the long article on which the summary in Exhibit 170 for identification was taken, in which article Mr. Young said: "The author is indebted to Dean John T. Madden and Dr. Herbert B. Dorau of New York University for statistical material recently prepared under their direction dealing with the experience of investors in public utility securities during recent years." At the direction of the Examiner, the document was marked Exhibit No. 171.

Counsel for the Commission handed to the reporter a document described as a photostatic copy of pages 251 and 252 of the July-August issue of the American Gas Association Monthly, an article "A Banker Analyzes Natural Gas Industry Investment Values" by Frank R. Den-
1435 ton, president of the Mellon Securities Corporation of Pittsburgh, Pennsylvania, with the request that it be marked for identification. At the direction of the Examiner, such document was marked Exhibit No. 172. EXHIBIT NO. 172 was offered and admitted in evidence over the objection of defendants who were allowed an exception.

Counsel for the Commission then handed the reporter a document described as a photostatic copy of pages 37, 38, and 43 of the magazine "Gas" for May 1939, an article entitled: "A Stock Broker Analyzes the Natural Gas Industry" by John Nickerson III, a partner of Winslow & Douglas, New York City, with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 173. EXHIBIT 173 was offered and admitted in evidence over the objection of defendants who were allowed an exception.

Counsel for the Commission next produced a document described as a photostatic copy of pages 56 through 61 of "The Index" published quarterly by the New York Press Company, an article from the Autumn 1939 issue entitled "The Gas Industry," with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 174. EXHIBIT 174 was offered and received in evidence over the objections of defendants who were allowed an exception.

Counsel for the Commission then produced a document described as a photostatic copy of page 66 of the August 1939 issue of the magazine "Gas," an article entitled: "Gas Air Conditioning Serves Dallas Office Building,"

with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 175. EXHIBIT 175 was offered and admitted in evidence over the objection of the defendants who were allowed an exception.

Counsel for the Commission produced a document described as a photostatic copy of pages 253, 254, and 255 of the July-August 1939 issue of the American Gas Association Monthly, an article entitled: "Fifth Big Job, Air Conditioning, A Challenging Opportunity by Charles R. Bellamy, Columbia Gas and Electric Corporation, New York, New York, Chairman Industrial and Commercial Air-Conditioning Committee." At the direction of the Examiner, the document was marked Exhibit No. 176. EXHIBIT 176 was offered and admitted in evidence over the objection of defendants who were allowed an exception.

Counsel for the Commission produced a document described as page 27 of the September 14, 1939 "Gas Age," the first page of an article entitled "Coordinated Effort Needed in House Heating," by Walter C. Beckjord, vice president and general manager, Columbia Gas and Electric Corporation, stating he had been identified in the record as the present president of the American Gas Association. At the direction of the Examiner, the document was marked Exhibit No. 177. EXHIBIT 177 was offered and received in evidence over the objection of defendants who were allowed an exception.

Counsel for the Commission produced a document described as photostatic copy of pages 24 and 33 of the magazine "Gas" for January, 1939, being an article entitled "The Natural Gas Industry Provides Opportunities for Investment" by James S. Carroll, with the request that it be marked for identification. At the direction of the Examiner, the document was marked Exhibit No. 178 for identification. EXHIBIT 178 was offered and received in evidence over the objection of defendants who were allowed an exception.

Counsel for the Commission produced a document described as "Annual Statistics of the Natural Gas Industry in 1938, Statistical Bulletin No. 37, October, 1939" by Paul Ryan, chief statistician of the American Gas
1436 Association. At the direction of the Examiner, the document was marked Exhibit 179. Statistics such as contained in Exhibit 179 have to be cooperative and voluntary because there are some elements in the industry who are not even under membership compulsion; I am not

sure of the percentage; such statistics are prepared as the usual trade association statistics are gathered, using all the devices at its command; but such an association does not have the compulsion, such as Federal Power Commission has, when it asks a company to make a report. I believe that these statistics obtain general acceptance in the industry as overall statistics. I doubt whether there is any other agency which goes to the same trouble in gathering as comprehensive statistics. In the census of manufacturers, attention has been given to the gas industry, but that such reports are not very satisfactory because the units they use are of infrequent intervals, and they do not view it as a utility in any sense; they are usually reporting on the matter as a resource situation for which reason the material is not very useful.

(EXHIBIT 179 was offered and received in evidence over the objection of defendants, who were allowed an exception.

EXHIBIT NO. 154 was offered and received in evidence over the objection of defendants who were allowed an exception.

EXHIBITS 170 and 171 were offered and received in evidence over the objection of defendants who were allowed an exception.)

1437 H. B. DORAU, a witness for defendants, recalled for further cross-examination, testified:

Cross-Examination by Mr. Slaff.

(November 6, 1939.)

I think I stated in my direct testimony that Moody's assumed to rate only 32 out of 87 natural gas bonds, leaving 55 issues unrated. I think I pointed out in subsequent testimony that that left only a certain number to be analyzed as to how they were rated; and I think it was implied that the non-availability of any such observation with respect to such a large proportion did not leave the investor much opportunity to benefit by such observations with respect to those. I think I said in subsequent explanation that I considered it more important as to how those 32 issues were rated.

I considered the investor as not having access to the final opinion of a rating agency with respect to those issues not rated. There are apparently various reasons why

final opinion of a rating agency with respect to those issues not rated. There are apparently various reasons why those issues were not rated. I think the reason the Natural Gas Pipeline Company of America's bonds are not rated by Moody's is that it has no securities publicly outstanding. The same reason applies to the bonds of Texoma Natural Gas Company, and to those of Northern Natural Gas Company.

It is possible that you are right in suggesting that 17 of these unrated issues were unrated because not publicly held. I did not count those companies. I was not giving particular attention to that group. I think it is a rather important consideration as to why they are unrated. There are other reasons applying to some of these issues than that they are not held by the public. As to those which are privately held, that fact would probably be the determining factor. There might well be other reasons in some situations. I did not mention that in my direct testimony. I had it in mind. I think it was the reason why I made the observation I did subsequently. The observation of which I speak, as I remember it, follows the testimony where I gave the number that are given different ratings. I think I made a statement to the effect that what was of more significance is the rating actually given those bonds which were actually found to have been given ratings. I cannot refer you to the page of the record. I am speaking from memory. I cannot find it in the record here. I certainly had it in mind. I say it should have been made if it was not.

I did not intend any particular implication in stating the over-all number. I was merely recording for the record the number, and that was in order to give some basis of comparison for the number that we actually dealt with. I do not have in mind those issues not rated because they are privately held. I made no attempt to memorize the particular issues because after having eliminated those which have no rating, I gave special attention to the others. I am willing to supply the information if you would like to have it.

The Examiner reminds me that I was to give the names of the two companies whose bonds were listed as Aaa. I think that was supplied to Mr. Slaff or Mr. Booth. In my statement shown at page 5676 of the record, in which I stated that I was convinced that people will receive service at a lower price under certain circumstances when we rely on the disposition and willingness of enterprising capitalists to take the chance than they would otherwise, I

1438 was not referring to the utility industry as a whole.

I think I meant properly to restrict the observation when I said "under certain circumstances". The circumstance that I believe would be important to consider there is that when there is a very considerable degree of risk present in an industry, the effort of putting it on a fixed or cost basis, so to speak, probably results in a higher over-all cost, because we are not taking advantage of the disposition of people to take the chances of getting 10 or 15 or 20% even, under conditions where the average return is probably 4 or 6 or 10%.

Calling my attention to my statement in my direct testimony that "there are conditions where a regulated industry actually develops a higher cost of capital than an unregulated industry," you ask what unregulated industries today are experiencing a lower cost of capital than say the telephone industry in the United States. I do not know. I have not made any statistical studies. You ask what unregulated industry is today experiencing a lower rate of capital than the electric industry. I have not made any such statistical study. You ask what fact I had in mind back of that general observation of principle. I had in mind the facts as to the conditions under which people are willing to employ their funds, a fact of human behavior that has been noticed over long periods of time. I made no statistical studies to attempt to prove that general observation at the present time. It was not intended to be based on any such statistical studies.

I made no statistical studies to support my statement that it is not an unusual observation at all to note that an industry where there is the largest chance of gain, actually averages out with the lowest cost of capital. I do not know that that principle has been statistically measured as such. I made no such observations, but I would like to add there that I am merely putting in summary form a principle which is common in the literature of economics from Adam Smith down. I think I quoted from that authority at this point in the direct. You ask me whether or not my discussion of this industry and the force of the Adam Smith doctrines and similar doctrines in relation to it necessarily embrace the free play of competition. My answer is yes, in large part, with respect to these bargains that have to be made in the competitive area. This is an inductive operation. It is a principle. I believe it is a principle. It is my opinion. I made no statistical studies to demonstrate the application of this Adam Smith principle to any present day facts. It was simply an observation of an old

principle of the disposition of human beings to take a chance and they are willing to do it even with a lower return, and that is not capitalized on fully when you fix a rigid ceiling for their expectations. As I said before, I made no statistical studies to back up this principle.

You asked me whether or not from my observations of the electric industry as a whole, I think the people would receive service at a lower price if we rely upon the disposition and willingness of enterprising capitalists to take a chance than if we had relied, as in the past 20 years or more, on regulation. Undoubtedly in the early period of the industry, they would not have received it at lower prices. In the late periods after understanding the principles of management and operation as they became more common, I am not so certain.

You ask me if I am familiar with the New Jersey situation. There are aspects of it that I understand quite well. You ask me if I concede that today rates are lower in New Jersey because of the presence of a regulatory commission than if there had been no commission with authority to regulate electric rates. I could not say as to that. That covers an awful lot of territory. There are other alternatives that I have in mind which you probably may not have. I was still thinking of the Public Service of New Jersey. I am not in position to say what would be the fact if there had been no public service commission in New Jersey since 1911. I am not certain but that circumstances might not be more favorable. One of the things I had in
1439 mind, of course, as an earlier alternative was municipal competition. I have also other considerations in mind which I really do not want to proffer, so I really say that I am not certain. I would hate to go on record with a categorical answer in that particular instance. You ask me whether I think that rates would have been lower in New York City if there had been no public service commission in New York since 1907 or 1908. I am quite certain that the top rates in the electric field would not be as low as they are now. I am very certain of that. I am equally uncertain as to what might be the willingness of the company to lower the price of larger volumes of consumption if the circumstances were different.

No, I do not think that the rates would be lower in Washington without the pressure of the so-called Washington Plan, because the attractive feature about the Washington Plan bearing upon this particular principle is that it does hold out some chance of sharing. I believe it is true that the company in Washington had to be forced by the pres-

sure of regulatory process into acquiescing to that plan of regulation, and I will say that the really attractive feature of that plan is that it offers some opportunity for sharing as an inducement. The fixed rate base is another matter which the plan offers as an attractive feature. I do not associate it with the question of inducement in marketing the securities as intimately as that. I think I have long recognized that one good argument for a fixed cost rate base or something of that sort is the administratability aspect. That does not mean that there are not other arguments against it. I have long recognized that it has more administratability. (Objection by Company Counsel overruled.) I do not subscribe to your suggestion that given administratability and given inducement to the utility under regulation, you then have a thoroughly workable plan of utility regulation.

The plan has been in effect in Washington since 1925. These 15 years have been years of very good times here in Washington from the statistics I have seen. When other things turned bad, the gains of consumption and of customers looked very good in Washington. I remember looking at some telephone statistics and found that the telephone service in this area went counter to the trend in the rest of the country. I think you have an unusual situation here. You ask whether or not it has worked in the two fundamental aspects in which regulation should work according to my conception, that is, in lowering the cost of service to consumers, and increasing profits to the investor. Yes, under the unusual conditions prevailing here and under the unusual sequence of circumstances since the inception of the plan. I do not understand that the people who are probably moderately well satisfied with it would necessarily recommend it for employment in other communities. No, I have not discussed it with the commission here in Washington. I do not suppose they would recommend it for other communities—I mean outside. I am willing to say very frankly that I am personally not convinced that it is something that could be transplanted successfully to Milwaukee, Wisconsin or Minneapolis or Des Moines, Iowa. I think its very attractive feature is that of holding out inducement to the investor or to the management of the enterprise. If that feature were in it, it would presumably be common to all places.

It is my recollection that the companies which invested their money in defendants' enterprise had had some experience in the natural gas industry. They include the

Cities Service Company, Standard Oil Company, Southwestern Development Company, Phillips, Skelly. I am of the opinion that all of these participants had had previous experience in the natural gas industry. I think I said on cross-examination that Henry L. Doherty and Samuel Insull were examples of the individuals directing the destinies of these corporate entrepreneurs with respect to this enterprise.

1440 I rather doubt whether Mr. Doherty, at the time he was putting his money into this enterprise, pulled down Jordan on Investments or Lagerquist on Investments to find out whether he ought to put his money up or not. I do not mean to imply that he probably was not acquainted with what was there. No, I do not believe that Mr. Samuel Insull consulted Chamberlain in order to determine whether Peoples Gas Light and Coke Company and the other utilities with which he was connected should go into this enterprise; but he probably had some of his brain trust looking into that sort of thing, and probably Halsey Stuart were telling him what the possibilities of financing an enterprise of that sort were. I rather doubt whether in 1930 they were consulting books that had been published in 1911 to determine whether they should go into this enterprise. It is purely speculative as to whether they consulted any of those authorities you mention; but since a number of people who were in this organization had been students and subjected to that sort of thing, I should not be surprised if it reflected itself somewhat.

In putting in Exhibit 151, I was thinking more definitely of the investor who never had any experience in the natural gas business than I was of those who had had an extended direct experience. I think an informed investor might well have looked at what such treatises have to say on the natural gas industry, even though he were well informed with respect to other industries. I never made any investigation to determine whether those books were in the Cities Service library. It has a good library and I expect that they probably would be there. Mr. Doherty probably would not have taken this book out some time in 1930. If anyone took it out, it would have been done by someone else for him. I think the volume by Lagerquist was published in 1924. I recall reading a sentence or two from page 390 of that work. I do not have a copy of the exhibit here. He said there that the "proof of the rapid diminution of natural gas is evidenced by the fact that five times the quantity of natural gas was used in 1888 as in

the last ten years." I do not consider the statement you have read significant. I did not analyze it and I did not check it to determine what ten years he was talking about. Yes, I looked at what I had copied out of Lagerquist. I did not note that it appears to be based on a special report of the U. S. Census of Mines and Quarries for the year 1902. I think the reference in the context there probably indicates he was making comparison between two periods.

If I was interested for a special purpose in what had happened in the earlier era of the industry, I would use the U. S. Census of Mines and Quarries for such purpose. No, I would not use it for determining the hazard in the industry today. I would not use it in determining what rate of return would tempt an investor today, except insofar as the past experience might be a guide to the future.

An investor in 1939 or 1930, judging the hazards of the natural gas industry from such point, would not rely particularly on the facts disclosed in a census report of 1902, except as that report might disclose the past and give him some basis of judgment for the future. I think an instance like the history of the pipeline built to Chicago prior to 1902, undoubtedly would throw quite a scare into him. I do not know whether the 1902 Census of Mines and Quarries referred to that pipeline. It probably did not because the census is probably primarily statistical. It is not historical in nature.

I put in evidence page 506 of Kirshman's work. I
1441 have no recollection that there is anything closely related to the subject appearing in pages 507 and 508 of the same work. It is well understood that after 1900 gas became more and more recognized as a medium of heat, fuel, and power. I think also that the language from Kirshman to the effect that "for these purposes it possesses many advantages. It is convenient to use, clean, it leaves no residue and is ready for instantaneous use at full heat capacity and may be suddenly extinguished," is of importance in this discussion. I considered it so obvious and so well known that it was not necessary to reproduce that from Kirshman. I did not reproduce the language you read from Kirshman to the effect that, "displaced from its present position for three-quarters of a century as the best means of lighting the home, gas has now become a greater necessity for heat in the home and for industrial purposes." The reason I did not reproduce it, as I remember it, was that when I came to the end of that other page there, the discussion seems to become more general and I

did not think it worthwhile to reproduce it. I think the statements are all right.

You read a statement that: "Gas for heating is in no danger of being supplanted by electricity, but even if electricity could be made a hundred per cent perfect for heating purposes, gas would still be more economical." I do not think that the facts there related are obvious. In fact, I do not know that they are true. I would state the situation quite differently from Kirshman. It was not true in my kitchen. Gas was supplanted. I have no objection to the statements contained on pages 507 and 508 of Kirshman. What was on those pages did not seem to add very much and I did not include them. I think the statements might have been added as an interesting comment. In the interest of economy, I did not extend that exhibit any further than seemed necessary. I am not saying that it is in the interest of economy to leave out the good things about the gas industry.

When I read into the record certain lines from Badger and Guthmann, it may be that I left out the first two sentences on page 486 of that work. If I recall correctly, the lines and portions that were desired in the record were suggested to me. I would have been willing to read the whole thing if you wanted the whole thing in. Whatever suggestion was made, was made right here in the hearing, while I was on the witness stand.

Certain portions of Exhibit 151 were marked up, but those marks were placed there in the course of examining the volumes and when they were turned in for photostating, the marks were left there. That probably explains my hesitancy in reading, because the marked portions were construed to have a significance which they did not have.

I believe that on page 486 of the Badger and Guthmann work appears the language: "In summary it may be said that the gas industry has survived the severe crisis presented by the rapid development of the electric industry and now appears to be in a satisfactory condition. Consequently, the securities of properly managed gas companies may be considered as conservative investments."

(At this point the Examiner pointed out that further down on the same page appears the language: "Outside of one or two small subsidiary companies, no manufactured gas properties of any magnitude or importance are now in the hands of receivers;" and that the author then went on to say: "The greatly increased availability

1442 of natural gas at low prices in recent years has done

much to enhance the position of this branch of the industry".)

To the best of my recollection, I read from Jordan on Investments that "the cost of the construction and operation of long distance pipelines, however, largely offsets the basic saving in production costs." You ask me about that statement as one of fact. If the natural gas resources that are in Texas were available at the outskirts of Chicago the very substantial cost of transportation would be saved. You ask me what I know about how much the cost of construction and operation of long distance pipelines offsets basic savings in production cost. If you buy the gas for 4c or 5c in the field and it is necessary to sell it for 25c at the point of delivery, the cost of operation and cost of the investment in achieving that change in place is certainly responsible for a substantial change in the cost.

I think it might be assumed that the author quoted was comparing the production cost of natural gas with the production cost of manufactured gas and that he was saying that the cost of construction and operation of long distance pipelines for natural gas largely offsets the basic saving in production cost of natural gas when compared to the production cost of manufactured gas. Assuming the cost of manufactured gas at 35 cents a thousand cubic feet and assuming that it costs 25 cents to bring natural gas to your market against the 4-cent price in the field, that is probably a substantial offset. I do not think 35 cents for the bare production cost figure for manufactured gas is an absurd assumption. I made no calculation with respect to how much of the basic saving in the production cost is in the case of defendants offset by a cost of construction and operation of the pipeline. I think I know enough about it to agree that to a substantial extent, the savings are offset by the cost of transportation. I believe it is a self-evident fact that it costs mony to transport gas from Texas to Chicago.

I think I testified as shown by the record at page 5741 that if there is an intervention of a contractual relationship between two separate enterprises engaged in various stages of producing and marketing a product, whose interests are not in common in the matter, there still remains a grave economic hazard, namely, that if the terms of that contract turn out to be other than what is bearable under the economic conditions disclosed, such a contract is not construed to be very much of an economic protection, and it is very likely to be modified to conform to the economic possi-

bilities of the situation. I was talking about a situation and not about the particular contract of defendants. I think it is a rather strikingly parallel circumstance to that of defendants.

In using the illustration of "the blades of pincers" at page 5745, I simply thought it the more dramatic way of reflecting the fact that the income is the difference between the revenue and the costs, and that the difference may result from a variety of changes. They may both be going up, both be going down, or both turning in, or both turning out. I had no insidious implication of any sort in that illustration.

I don't remember the name of the report which I read some months ago on the conservation policies in the State of Texas. I think I could supply it from my record 1443 of things that I read. In connection with my consideration of that point, I gave some thought to the possibility that other fields might be discovered or might be in existence which might tie into this pipeline when the Texas Panhandle is exhausted. I considered particularly the possibility that there might be a field closer to Chicago which would make a portion of the pipeline useless. That would mean an embarrassing supply of gas made available to Chicago. I think when I considered the possibility of other sources of supply, I also considered in that connection the fact that such other sources of supply might be the basis of a competitive supply. I considered as a possibility the fact that another source of supply might be available to defendants after the Texas Panhandle field was exhausted, so that it could continue in business after the Panhandle was exhausted.

I don't think I could characterize the consideration that I gave to that last suggestion in terms of weight. When I thought of the possibilities, I would take a look at the indicated fields and the areas that they appeared to cover; and it did not seem very probable that in that general area from which this pipeline came there would be additional areas between the Otis field, the Hugoton field, and the Panhandle, they seem to have pretty well explored the possibilities down there. The possibility of Nebraska and other portions of Texas is another matter.

I assumed that the probability of exhaustion constituted a hazard which the investment in this pipeline ought to face. I did not assume that the companies' business would end with the exhaustion of the Texas Panhandle field. I assumed that the probability of that happening was an important hazard in this undertaking.

At page 5754, I stated in substance that with reference to the possibility of a common purchaser statute, I had considered that possibility as one of the hazards. I appreciate the indirect possible consequences of a common purchaser statute. In that connection, I considered that it might tend to lessen waste.

I did not make a nine or ten months' comparison of the revenues of this company during 1939 with the corresponding months for the year 1938. I am under the impression that the revenues are improving. At the moment, I think an investor would be impressed with whether the short-term trend was up or down. One short period would probably be as significant as another. According to my recollection, I was not asked to compare the revenues of 1939 with the 1938 revenues for similar periods. My volunteering has been considerable restricted here. I do not mean that the Examiner has restricted me, but the manner of conducting such a hearing necessarily restricts a witness from saying everything he might want to.

I find that on page 5780, beginning at line 17, I discussed the falling off of revenues between 1937 and 1938 and gave substantially the same type of answer as with respect to the comparison of 1938 and 1939. I added that I thought that merely looking at one year's decline is not adequate for an investment judgment. I thought I said something to that effect.

At page 5788, I made the statement that the competition which natural gas finds itself in with such fuels as fuel oil and distillate and coal and things of that sort, is a factor to be taken into account with a company 40% of whose gas is sold for industrial purposes; that any change in the relative position of competitive service or competitive fuels ought to be taken into consideration; that any
1444 change in the relative position of such competitive fuels would have the same effect that the introduction of a directly competitive line would have; and that is that a loss of any substantial portion of the business due to the relatively more favorable price of oil or coal would reduce the volume, and that volume is apparently very significant for this particular enterprise. My statement there, "any change in the relative position of competitive service or competitive fuel", is a trifle broad. The change of course would have to be downward. I think, however, that is implicit in my answer. Naturally, the price of gas must remain the same. A change upward in the price of coal or oil would improve the position of natural gas and would

be appropriately considered. I am quite aware that there are some industrial applications where natural gas has unique characteristics and where the question of oil or coal is not a major factor.

Cross-Examination Interposed by Mr. Booth.

I examined the coal and oil prices, but did not attempt to make any comparison to determine at what price coal would have to sell in the Chicago area for industrial purposes in order to put it on a competitive basis with natural gas sold by this company for industrial purposes, because the price varies with the application most certainly, and I do not think you could generalize it. I do not know at what price coal would have to sell for a particular use. I don't think you can generalize that. I looked up the price of coal at some time during the course of my studies but I did not attempt to equate them.

Cross-Examination by Mr. Slaff Resumed.

No, I do not know how much of a change there would have to be in the price of those competitive fuels before it would have any competitive effect on the sale of natural gas for industrial uses in those fields where there is that competition. I realize that the actual determination is a matter of the application under specific conditions, as the use of electricity and gas for example. It cannot be determined on a heat unit basis competitively.

At page 5791, I stated that I believed in building a solid foundation in the most fundamental factors and working up from those to the more immediately and directly observable applicable evidences.

I considered the background of the ideas that I was trying to develop as of that fundamental character. I merely meant to distinguish between the underlying considerations and the more obvious evidences such as would be displayed by the price of securities in the market. I think the question of the solidity of the fundamental factors is a limited term and relates to what a person can say in a limited time. I would invite you to come up to the course for a year and see what we could do.